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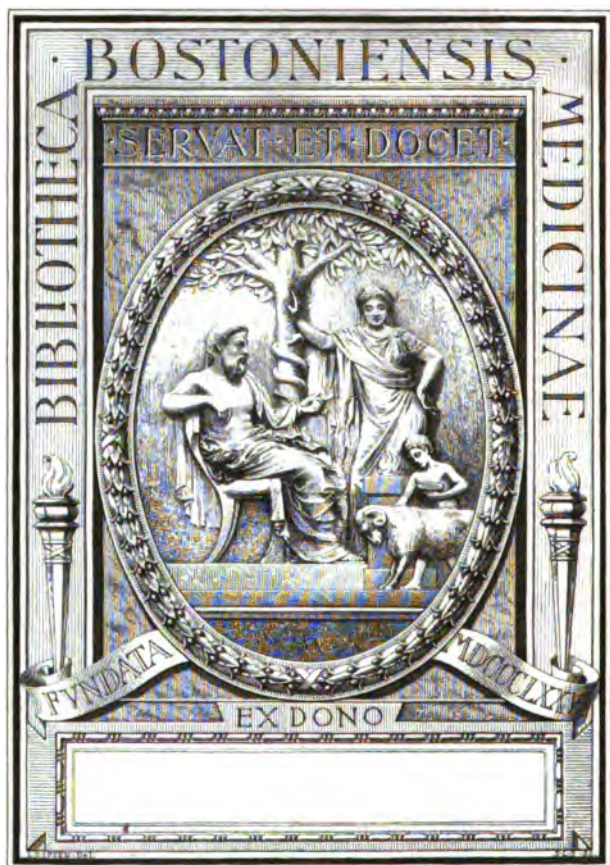
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EDITED BY

JAMES EVELYN PILCHER, M.D., L.H.D.

MAJOR AND BRIGADE SURGEON OF UNITED STATES VOLUNTEERS;
CAPTAIN, RETIRED, IN THE UNITED STATES ARMY.

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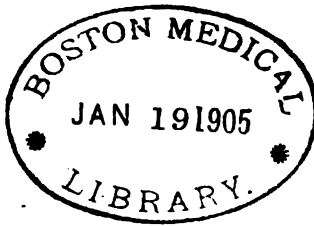
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Original Memoirs.

THE PROPHYLAXIS OF VENEREAL DISEASES.

BY COLONEL VALERY HAVARD,

ASSITANT SURGEON GENERAL IN THE UNITED STATES ARMY.

THE prevalence and terrible effects of venereal diseases in all civilized countries have been more fully realized, of late years, not only by the medical profession but by all persons taking an intelligent interest in the physical and moral welfare of the race, and the very important subject of the prevention of these diseases, too long studiously kept in the background, is now imposing itself upon public attention.

In 1899, an International Conference for the prophylaxis of venereal diseases, attended by the leading specialists and other representative men from nearly all civilized countries, met in Brussels, Belgium. From it sprang the *Société internationale de prophylaxie sanitaire et morale*. A second International Conference, as it were, the continuation of the first, met in the same city, in 1902, also largely attended, where these diseases were again thoroughly discussed, in the light of greater knowledge and experience, and useful resolutions passed.

Meanwhile, the subject was likewise arousing attention in the United States, especially in the metropolitan city of New York. In 1900, a Committee of Fifteen was appointed by the mayor of New York from among the leading citizens, to investigate sexual vice from the moral, municipal and police standpoints and submit recommendations for its restriction or prevention. A member of the committee studied the whole question of prostitution, in a general way, and produced a comprehensive, scholarly book, "The Social Evil", which embodies the views of the committee. In 1901, a Committee of Seven was appointed by the Medical Society of the County of New York for the "study of measures

for the prophylaxis of venereal diseases," with Dr. Prince A. Morrow as chairman. Its report (*Med. News*, Dec. 21, 1901) is a very valuable exposition of the best medical thought on the subject in this country.

The writer of this paper, having been chairman of the board which reorganized the "Service of the Hygiene of Prostitution" in Cuba, in 1900; having also had the privilege of attending the second Brussels conference, in 1902; and otherwise given a good deal of attention to the literature of the prophylaxis of venereal diseases, has formed more or less definite opinions thereon, which he submits to his fellow members of the Association.

To understand the nature and extent of the ravages of the evil in question it is necessary to collate statistics. Unfortunately, as we know, in no other class of diseases are statistics less reliable. Although venereal diseases are all contagious and a great, constant menace to society, there is no law in any country requiring that they be reported to sanitary authorities, and were such a law enacted it would be a dead letter and remain inoperative. Even in city hospitals, where one would expect complete and correct records, we generally find that when diagnoses are not entirely omitted, they are mostly unintelligible and of no scientific value. In a New York public hospital, "it has been ordained that these diseases appear not under their true names, but disguised under a variety of aliases which do not betray their venereal origin" (Committee of Seven). Deaths, the direct or indirect result of syphilis or gonorrhea, are carefully ascribed, in our mortuary records, to any but the correct cause. What family physician would betray his trust and make public the nature of a shameful complaint? Specialists would seem to be in a position to form approximate estimates of the prevalence of these diseases, but even among them there is such diversity of opinions that one realizes more than ever the difficulties of the problem.

The only statistics sufficiently reliable to afford us useful information and from which we may draw conclusions, are those of the armies and navies of civilized nations; but even military statistics are often only mere approximations; they admit of liberal interpretation and must be used with discretion; they simply

give the number of admissions to hospital, or of cases otherwise excused from duty; but we know that in all armies and navies a certain number of cases are treated without being excused from duty, therefore without being recorded. Furthermore, it is also incontestable that a notable proportion of cases, often amounting to 25-50 and more per cent., do not report to the military surgeons, but, for reasons unnecessary to mention, seek treatment at the hands of civilian physicians, visit advertising quacks or else treat themselves. On the other hand, it is true that a certain number of cases are returned to duty and again readmitted, so that they are counted more than once; such cases, however, are infrequent and can in no way offset those remaining unregistered. We may safely accept, as a guiding principle, that army and navy statistics much underrate the exact status of cases and should be accepted only as a minimum.

ARMIES.

In the German army, venereal diseases have, of late years, been steadily diminishing. Thus from 29 cases per 1000 men in 1894-1895, the ratio had fallen to 21 in 1897-1898. This decrease affects the several diseases to nearly the same extent; thus syphilis which contributed 9 per 1000 in the period 1886-1891, was only 4.4 in 1897-98.

In Belgium, there has also been a marked decrease, from 60 per 1000 during the period 1875-1882 to 27.5 in 1900, the syphilitic cases falling quite in the same proportion and now ranging from 5 to 7.

In the French army, the same decrease is noted; from 66 per 1000 in 1880 to 32.5 in 1898; greater in gonorrhoeal cases, the proportion of syphilis having only fallen from 7.8 in 1895 to 6.9 in 1896, 6.5 in 1897 and 6.8 in 1898.

In Austria, the admission rate for the period 1891-96 was 61. In 1888, the ratio of syphilitic cases per 1000 was 18.9 and in 1891, 19.1; later records are not at hand.

In Italy, these diseases fell steadily from 120 per 1000 in 1863-65, to 47.5 in 1887. In 1888, through the influence of English propaganda, the regulation of prostitution having been abolished, the ratio rose at once. For the year ending

March, 1888, it was 42.5, while for the year ending March 1889, it was 102.3 or more than double. In Milan alone, for the year ending October, 1889, there was, over the previous year, an increase of 1654 admissions, 504 of which were for syphilis. This rapid increase over the whole peninsula, quickly following the abolition of the official regulation of prostitution, became so obvious and alarming that it was deemed necessary to reestablish it in 1891; this was done, however, in a rather weak, ineffective manner so that the rate of venereal diseases has remained comparatively high.

In Russia, the ratio of syphilitic cases for the period 1889-93 ranged from 10.4 to 12 per 1000; more extended or later statistics are not available.

In Great Britain, according to the reports of the Army Medical Department, during the period 1870-82, prostitution in certain garrison towns was under sanitary control, while in others it was entirely unrestricted. The result was that in the former towns (under control) the ratio of admissions was only 50 per 1000 men, while in the latter (unrestricted) it was 118. In 1883, the compulsory examination of prostitutes having ceased in all Great Britain, the rate in the towns previously under control rose to 110, and to 138 in 1884. In the whole United Kingdom, the proportion of venereal diseases admitted to hospital (therefore probably not including minor cases) for the period 1889-98 was 180.8 per 1000, with 85 for syphilis; in 1898 it fell down to 132.7 with 57.2 for syphilis, and in 1899 to 122.4 with 51.3 for syphilis.

The effect of reglementation was strikingly shown at Cape Town (South Africa) as well as in India. At Cape Town, the yearly average for the period 1884-88, before prostitution was regulated, was 674 per 1000, while after the enforcement of compulsory examination (in 1889) the ratio fell to 349 for the period 1889-97.

In India, when all reglementation was abolished, in 1888, a frightful increase took place at once; in 1895, out 36,681 admissions to hospitals, 22,702 were for syphilis. In 1897, certain protective measures, such as the removal of prostitutes beyond

military boundaries, the examination of those voluntarily submitting, &c., having been adopted, their good effect was shown at once by a reduction in the rate of admissions, the figures for 1899 being 313.5 (namely 129.3 for syphilis 63.1 for soft chancre and 121.1 for gonorrhea) the lowest known since 1890.

In the Argentine Republic, the rates for 1901 were 119, namely gonorrhea 62, syphilis 33 and chancroids 24. But these figures have varied very much, from year to year, according to the extent camp women were examined and treated. Thus, in 1895, all prostitutes in Santa Catalina, as well as enlisted men, having been subjected to examination, the ratio for syphilis fell from 20 to 1 per cent., a whole regiment not showing a single case (*Anales de Sanidad Militar, Arg. Rep.*)

In the United States, the rate of admissions during the normal peaceful decade 1889-1898 was 71.45 per 1000. With the reorganization and increase of the army made necessary by the Spanish War, the rate rose steadily and, for the year ending June 30, 1900, was (for troops in the United States) 127.35, namely 13.49 for syphilis, 26.57 for chancroids and 87.29 for gonorrhea. It has continued to increase: thus, for the year ending June 30, 1901, it was 155.39, namely 19.62 for syphilis, 33.35 for chancroids and 102.42 for gonorrhea. For the year 1902, according to the last report of the Surgeon General, it was 160.94, namely 22.37 for syphilis, 31.99 for chancroids and 106.58 for gonorrhea.

NAVIES.

In the navies of the great powers, statistics, although very imperfect, justify the belief that, as a general rule, venereal diseases are even more prevalent than in their respective armies. One of the principal reasons for this must be the greater opportunities enjoyed by sailors and marines to visit women entirely free from sanitary control. Thus France reports a rate of 76.30 per 1000 in 1899 and 73.21 in 1900; Germany, 105.1 in 1892; Austria, 87.3 in 1893; Italy, 126.7 in 1894; Holland, 283 in 1893; England, 282 in the period 1892-94. The United States reports 51.6 for the period 1896-1902; this ratio is evidently too low and untrustworthy.

CIVIL LIFE.

The above statistics afford some idea of the prevalence of venereal diseases among soldiers and sailors, that is, mostly men between the ages of 20 and 25. It is much more difficult to obtain information concerning their frequency in civil life. Here statistics fail and we must rely chiefly on the estimates of specialists. These estimates would seem to indicate that, in cities, the proportion of venereal diseases among the same class of men is not any less, but probably much greater than among soldiers. Thus, according to Blaschko, there is in Berlin about 10 per cent., and according to Erbs, 12.02 per cent. of syphilis among adult males. This would imply from 40 to 50 per cent. of venereal diseases of all kinds. It is well known that in the German army the highest figure is reached in October, month of the incorporation of recruits. The *Bulletin de la Société de Prophylaxie Sanitaire et Morale* admits that the adult male population of Paris contains 13 to 16 per cent. of syphilis. If, according to Fournier, one-seventh of the whole population of Paris is syphilitic, the proportion among male adults must be raised to at least 25 per cent.

In New York, Dr. Sanger, in his History of Prostitution, computed that, in 1857, there were 106 cases of venereal diseases per 1000 of population. In 1874, Dr. F. R. Sturgis estimated the proportion of syphilitic cases at 54 per 1000; practically the same proportion (55) is given in an appendix to Dr. Sanger's book, in 1892. If we multiply Dr. Sturgis' estimate by 4, we shall obtain the approximate total ratio of venereal diseases, 216 per 1000, which apparently prevailed from 1874 to 1892 and later. The Committee of Seven, on what would seem to be fair data, computed that, during the year 1900, about 225,000 cases of venereal diseases were treated in Greater New York. The population in that year being 3,500,000, we obtain a ratio of 64 per 1000, or less than a third the ratio of Sturgis. Are we to conclude that the morals of New York have undergone a sudden reformation? This is not likely, judging from the 412 replies received by the committee to the question, "Are venereal diseases on the increase in this city (New York)?" more than half being affirmative. All physicians who have charge of venereal clinics in New York have

been impressed with evidences of the growth of juvenile vice during the past few years. It is much more probable that statistics are at fault, owing to the extreme difficulty of finding, and giving just value to all the factors of such complex problem.

If the figures of the committee approximate the truth even distantly, then we may boast that our metropolitan city, and presumably other large U. S. cities, are several times freer from venereal diseases than the capitals and large cities of Europe. But, on the other hand, we are confronted by the fact that, as compared with other countries, our army shows the highest ratio of these diseases. Thus, while our civil population would appear to rank highest in the world scale of sexual morality, our military population stands lowest. Can such contradiction be explained, or does it really exist? I shall not attempt to answer.

Several reasons can be adduced why venereal diseases should be at least as prevalent in civil life, among the male adult population, as in military life; perhaps the strongest is the relative poverty of a great majority of soldiers; they draw but little pay or none at all, and therefore cannot indulge in much or expensive dissipation; they mostly frequent cheap prostitutes, that is precisely those who, on the continent of Europe, are subjected to reglementation and, therefore, much less dangerous than their clandestine and more attractive sisters. There is no doubt that the greater ratio of venereal diseases among English and American soldiers is due not only to the absence of reglementation but also to their much more liberal pay.

The above statistics, although fragmentary and not as accurate as could be wished, yet suffice to give us a fair idea of the fearful prevalence of venereal diseases in all civilized communities, of their terrible ravages, not only among adult males but also among innocent women and children, and of their baneful effect upon the human race.

SANITARY PROPHYLAXIS.

Venereal diseases being the direct result of sexual vice, is it the duty of the state to take any action for the restraint of prostitution, and, if so, to what extent is such action desirable and equitable?

Attempts have been made in various countries and at different times to abolish prostitution, but all laws and penal enactments to that effect, however, strictly enforced, have been futile, and it is now generally recognized that the "social evil," like other violations of the moral law, can only be regulated and mitigated but not stamped out. Prostitution then, being one of the inevitable evils of modern civilization and always a great menace to society, it would seem to be the clear duty of the state to take cognizance of it and enforce all just and reasonable measures to restrict and render it as little obnoxious as possible, and thus protect the people, so far as is practicable, against the dangers of venereal infection.

Because a vice is particularly shameful and repugnant, it should not on that account be ignored and allowed to grow unchecked. The sense of self-defense as well as the experience of ages teach that the best results are obtainable by surrounding the practice of prostitution by police and sanitary regulations, so as to keep it within certain limits, even if such regulations imply official recognition and toleration. In other words it is lawful for the state or for the individual to permit a smaller evil in order to prevent a greater one; it is lawful and the best policy to tolerate houses of prostitution if, thereby, we are able to exercise some degree of control over them and thus prevent the worst evils of sexual debauchery.

Many excellent people, whose influence on legislative bodies is distinctly felt, especially in England and America, believe and contend that no government has the right or the duty to recognize and regulate prostitution; that it cannot recognize it without compacting with vice and defiling itself, nor regulate it without exceeding the bounds of its legitimate authority.

These so-called abolitionists started their crusade against the sanitary regulation of prostitution in England where they obtained the strongest support and still wield the greatest influence. Thence they extended their propaganda chiefly to Italy, Norway, Holland and the United States. The English government yielded everything to their demands, and prostitution was left uncontrolled and officially unnoticed. The result is told in the statis-

tics presented above, and still more graphically by Robert Donald, editor of the *London Municipal Journal*:—"A stranger in London would at once conclude that the city was the most immoral on the face of the earth. In no city are there such disgraceful scenes in the streets at night. Immoral women take possession of a number of West End streets every evening, and carry on their traffic unmolested. They come from all over Europe, and enjoy complete liberty, apparently under the protection of the police. Their presence in such numbers is the ugliest blot on the government of London. Citizens are deprived of the free use of their streets, and respectable ladies could not patronize any of the West End restaurants for supper. The traffic is not confined to the best-known streets. There are perpetual processions on the pavement in all the principal London thoroughfares. * * * * *

The result is that immoral women have as much right in the streets as the policeman. They have their regular beats, just like him. So long as they walk they are free to do what they like, but they must not stand and obstruct the pavement. They are then committing an offense which the police recognise—obstruction—and they will be told to move on. As their chief business is to move on, this is not a great hardship. The doctrine, therefore, of free trade has been extended to prostitution."

The arguments of the opponents of the sanitary regulation of prostitution are that it is an immoral policy; that, at best, only a small proportion of women, less than half, can be reached; that the examinations are perfunctory, carelessly done and too infrequent to be useful; that prostitutes, when submitting to reglementation, have already practiced their traffic several years and passed through the contagious manifestations of syphilis; finally, that a sense of security is given to some men who otherwise would be deterred from debauchery for fear of infection.

As to the morality of tolerating houses of prostitution in order to subject them to sanitary control, enough has already been said. It is my opinion that such control is useful, preventive of much disease, and therefore lawful and in the interest of the state. It is a case where the end justifies the means.

We must admit that the other arguments of the abolitionists

contain more or less truth and carry weight with them. The reglementarists admit the imperfections of their system, as generally applied, and are quite willing and desirous to improve it; at the Brussels Conference they offered to meet the abolitionists on some middle ground of possible agreement, but the latter stood by their principles and were uncompromising. It is enough for us to recognize that, according to the practical experience of nations, sanitary reglementation, even with all its alleged defects, gives much better results than free prostitution. This was strikingly shown in Havana where a complete system of reglementation was instituted, or rather where the existing Spanish system was reformed and perfected, early in the American occupation. The result was that a city, proverbially addicted to pleasure, has probably a smaller rate of venereal diseases than any other city of its size. Thus, in 1900, the number of women registered and examined was 852, of whom less than one tenth were found diseased. Of the 8000 members (all males) of the Covadonga Mutual Association, only 213 came under treatment for venereal diseases, or 2.66 per cent., such treatment being free to all members.

Official reglementation, that is to say, the registration and sanitary examination of prostitutes, is the ideal system in theory, and wherever it can be properly applied, the best in practice; but its application necessarily meets with many difficulties, and unless these can be thoroughly overcome, the results are not satisfactory. To be successful, it must be not only approved by the medical profession but also sustained by the moral sanction of a great majority of the people; such sanction, for reasons we need not discuss, cannot be obtained in this country. A law establishing reglementation could not be enforced, or only partially and very imperfectly, and therefore would be worse than useless. In this respect, venereal diseases cannot expect to fare better than small-pox. The experience of generations of physicians has proven the absolute efficiency of vaccination against small-pox, and yet the only countries where vaccination is compulsory are Germany, France and Cuba, the countries, let it be said in passing, where reglementation finds most favor. In the same manner, were physicians substantially agreed that reglementation could stamp

out venereal diseases, I do not believe it could be enforced in the United States.

The Committee of Fifteen takes a decided stand against state reglementation. Its members, however, are not to be classed with the English abolitionists for they strongly advocate the moral and police regulation of vice and, to that end, submit a series of most valuable recommendations.

The Committee of Seven, to the question "What measures are best adapted to limit or prevent the dissemination of venereal diseases?" received 1065 answers, 340 of which, or about one third, advocating reglementation. The Committee recognizes its partial efficacy, but considers the system, as practiced in Europe, defective and incomplete and, furthermore, of impossible application in this country.

If the examination of prostitutes cannot be made compulsory, must it be entirely given up? No, the good effects of it may be obtained to a very appreciable extent by the system of voluntary examination; that is, by explaining to these women the advantages of such examination and inviting them to submit to it. The obligatory feature is what runs counter to the American sense of personal liberty, and I doubt whether voluntary examination would arouse much effective opposition. Such examination already exists in various countries, including our own, prostitutes being impelled to it by one of the strongest impulses of human nature, self-interest. The card of the medical examiner is the means of attracting more and better clients, and she finds honesty, in this regard, to be her most profitable policy.

Under the circumstances, the system of sanitary prophylaxis which appears most practicable and beneficial may be outlined as follows:—

First, let the State, county and municipality recognize the existence of venereal diseases, as they do other infectious diseases, and not ignore or screen them because of their peculiar character. Let them recognize the fact that they far outnumber the total of all other infectious diseases and are, therefore, the most immediately dangerous to the public. Let them provide enough free dispensaries for the examination of all venereal men and women

who now go without treatment or enrich advertising quacks. From this class of poor patients the infection is largely spread. In these dispensaries, there should be a department for the systematic weekly examination of all women desiring it for their own protection and that of their clients. There is no reason why such examination could not be made by female physicians. Enough hospital accommodations should be provided for all acute infectious cases, for among the poor no other form of treatment is efficient.

Accommodations for venereal cases are now sadly lacking in most of our public hospitals, especially for patients in the first or most infective stage, when treatment is most necessary to avoid dissemination and complications. They are often readily admitted later when suffering from the effects or sequels of their disease. As very well said by the Committee of Seven, hospitals proclaim to this class of patients "We cannot receive you when your disease is acute and curable, but when your gonorrhea has developed into stricture, salpingitis, peritonitis, or when your syphilis has affected important central organs, the brain, the spine, the organs of special sense, you may be received, but your disease shall be baptized under another name which does not offend the refined susceptibilities of our patrons." One large dispensary in New York has no genito-urinary department because "The trustees will not foster vice by curing the diseases produced by ungodly conduct."

The system of voluntary examination will be easier and more efficient if prostitutes are allowed to congregate in houses and be more or less under the control of a matron, for the latter has every interest to maintain the good sanitary reputation of her establishment and will induce or even compel the women under her charge to seek examination and treatment.

The same plan might be profitably applied to camps and military posts. We know the character of the many places of amusement surrounding large garrisons, the number of prostitutes hovering round and lying in wait for our careless, often unsuspecting soldiers. It would not be impossible to induce a certain proportion of these women, perhaps a majority, to submit to examination in

exchange for a white card duly stamped, and perhaps some little privilege of toleration by the police or military authorities.

The voluntary system is certainly a long step in the right direction, but progress can be hastened and much better results obtained if, at the same time, boards of health are empowered to apply and enforce all reasonable sanitary regulations—and, for the purpose, to employ a special body of inspectors. One of these regulations, and perhaps the most important, should require all venereal patients to seek treatment, either privately or in hospitals, and this, at the hands of reputable, duly licensed physicians. This regulation should specifically require keepers of brothels to report at once all cases of disease among the inmates. It should also provide that any prostitute reported to the board of health, by any body, as being diseased, may, in the judgement of the board, be subjected to examination and segregation. Any power given boards of health would be futile if not including that of forcible detention of prostitutes in hospital for a limited period, long enough to cover the most infective stage.

In the army and navy, it is possible to subject the men to a weekly or fortnightly examination, as is done in Germany and France, all men found diseased being kept in hospital or confined to the limits of the garrison. There is no question of the efficacy of this sanitary measure. It was carried out in some of our regiments in Cuba with immediate beneficial results, and I also understand that it has been found very useful in the Philippines. Whether it is desirable to introduce such a measure as a permanent regulation in our service is doubtful, but there will be times and places when it will be found one of the most efficient weapons with which to combat the venereal enemy.

MORAL PROPHYLAXIS.

Under this heading, first comes the fundamental question of education, that is to say, the development of character, uprightness, self-restraint, honesty and morality; all those qualities which ensure health, honor and success. It is clearly the duty of the state to foster in every possible way the acquisition of these qualities by the boys and girls for whose mental training it provides

so liberally. Is the state doing its duty in this regard? The answer to this vital question has no place here.

The Committee of Fifteen takes a decided stand against the prostitution of minors, recommending their coercive confinement in asylums and reformatories. Young girls who fall from virtue, do so mostly from penury and ignorance. Had they been able to find suitable work and received good counsel when the first temptations came, or soon after succumbing, when the shame of it was still upon them, it is certain that many would have been saved or redeemed. Any good influence which would keep them from falling into vice until they have enough knowledge and experience to realize the meaning of a life of prostitution would probably save most of them. Relatively few women begin after they are 20 years old. When we realize that these young prostitutes are particularly prone to infection and the chief propagators of venereal diseases, the necessity of severe coercive measures becomes obvious. On this subject, there was substantial agreement at the Brussels Conference; it resolved, by a large majority, that it was the duty of the state to enact a law making prostitution a crime for all women under 18. Any girl under that age, caught in a house of ill-fame, soliciting in public places, or in any act of prostitution, should be arrested, brought before a competent judge and, if it be found that her parents or tutors are unable or unwilling to take proper care of her, sentenced to reclusion, not in a prison, but a special reformatory institution, until she reaches the age of 18. The state, however, can accomplish but little if unaided; such vital work of reform calls for the best efforts of society, and of all civil and religious associations organized in view of social purification.

It is well known that prostitution is to a large extent dependent upon poverty and promiscuous overcrowding, and that every effort made to improve the material condition of the poorer classes tends to elevate them morally. The influence of a clean comfortable home over the minds and hearts of its inmates cannot be overestimated. Let all tenements and lodging-houses for workmen, laborers and artisans have plenty of air and enough space to secure a reasonable degree of privacy; only thus can children, in the

crowded dwelling; of the poor, be saved from their greatest dangers, the sight of sexual vice and hearing of obscene language. In this respect, New York and other American cities are distinctly behind most European cities, the municipalities of the New World being apparently more inclined to favor the landlords than the tenants; as a consequence, tenement-house prostitution has long been one of the crying evils of our large cities.

Probably nothing demoralizes youth more than indecent literature, plays and exhibitions. Freedom in this respect runs riot and everywhere degenerates into license. The lowering and sensualizing of the stage during the last quarter of a century is one of the evil signs of the time. Hardly a play which does not appeal to the lower instincts of the public by gross or veiled suggestiveness, and which an honest man can not attend without loss of self-respect. In this matter the supply is according to the demand and no remedy need be expected from the public; only strict state or municipal censorship can be of much avail.

Let the state repress relentlessly all obtrusive incitement to debauch; prostitutes cannot be suppressed but they should never be allowed to flaunt themselves or exercise their seductive arts on the street or in any other public place; thus a better moral atmosphere is maintained and many young men saved from temptation and ruin.

Strict laws should be enacted to prevent prostitution from becoming a part of the business of certain hotels, lodging-houses and saloons, the usual resorts of clandestine prostitutes and dangerous traps for the unwary.

It is also one of the important duties of municipalities to provide suitable forms of amusement for the poorer classes, such as parks, baths, museums, libraries, gymnasiums, etc. which men can be induced to frequent who, otherwise, would be attracted by the garish saloon and other places of dissipation.

DIFFUSION OF KNOWLEDGE CONCERNING THE VENEREAL PERIL.

The Brussels Conference passed the following resolution unanimously: "One of the most important and efficacious means to combat the propagation of venereal diseases is to diffuse, as wide-

ly as possible, the knowledge relative to their nature, importance and gravity''.

As a general principle, this resolution met with no objection, but when it came to the discussion of details in its application, there appeared the usual divergence of views. To whom was this knowledge to be imparted? Evidently not to young boys; to speak to them of such subjects would be waking up instincts and desires still dormant or undeveloped and gratify much unhealthy curiosity. I believe, with Prof. Fournier, that the minimum age to receive such instruction should be 18. In colleges, it could be made a part of the course on hygiene, if there be any, given to the junior or senior class. It is necessary to add that it should be given by a competent physician, for there is hardly any subject about which half or imperfect knowledge is so dangerous. As to the general public, this instruction is simply impossible without conveying it also, however indirectly, to youth of both sexes, a result which nothing could justify. But it is quite possible to reach certain classes of grown, mature men, such as factory hands, miners and night-school pupils.*

No class of men need this knowledge more than soldiers and sailors, not only for their own preservation but also for the safety of the colonies where they may be stationed. It is a sad fact that venereal diseases are now prevalent in many interior places, in the Philippines, where they were unknown before the American occupation. A plain talk by the surgeon to each company at his post, or to the sailors and marines on his ship, would doubtless have excellent results. It should include those hygienic measures indicated after the disease is contracted, to mitigate the effects and prevent the propagation of it. Here the question may be asked, whether this instruction to soldiers and sailors should also include those direct means of prophylaxis to be used before and after sexual relations, as is being done, for example, by a certain num-

*I wish to call attention to an excellent little pamphlet "The Boy's Venereal Peril", by Dr. Ferd. C. Valentine of New York, for the use of young men, under the guidance of parents, teachers or physicians. I know of nothing better for the purpose.—Press of the American Medical Association. 103 Dearborn Ave. Chicago.

ber of surgeons in the French army and navy. My own inclination is strongly for the negative. It is putting medical officers in a very undignified position of *particeps criminis*, somewhat like putting a key in the hand of a thief that he may rob without breaking the window and attracting the policeman. There is no doubt that the fear of contracting disease keeps many men away from prostitutes; here, as has been said, fear is the beginning of wisdom; but if soldiers and sailors are given a fancied sense of security by the use of certain measures recommended by their medical officers, one of the restraining barriers is broken down and it is very probable that the result would be an increase of immorality without any decrease of disease.

The War Department fully realizing the beneficial effect of suitable instruction to young soldiers, has caused the publication of a booklet, "The Venereal Peril" which has been distributed to all companies in the Army.

FRACTURE OF THE PATELLA TREATED BY PERMANENT EXTENSION.

TWO cases of fracture of the patella were treated by A. Reuterskiöld (*Tidskrift i Militar Halsövard*) according to the method of G. Neumann with the result that after ten weeks the fracture was practically healed and the joint movable. After six weeks the patients left their beds and walked with a cane. In one of the cases there was a separation of three to four fingers breadth between the fragments at the time of the accident; the next day the fragments were already closely approximated. The treatment allows massage of the quadriceps and is very easily applied.—HANS DAAE.

DISLOCATION FIRST METATARSAL BONE DOWN-
WARDS AND OUTWARDS INTO PLANTAR ARCH
DIRECT REDUCTION THROUGH OPENING
MADE BY INCISION. RECOVERY.

By HENRY W. SAWTELLE, M.D.

SURGEON IN THE UNITED STATES PUBLIC HEALTH AND MARINE
HOSPITAL SERVICE.

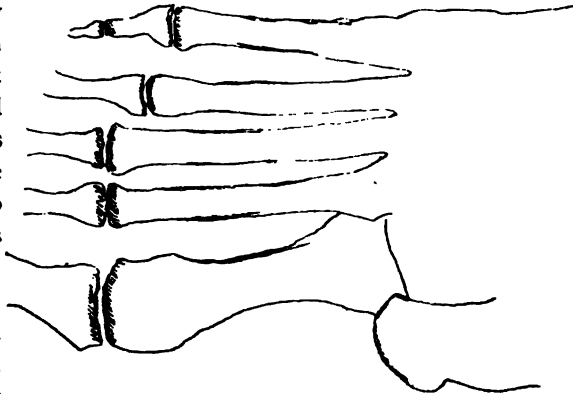
BUT little reference is made to this rather unusual form of injury in the surgical literature at my command, and the following particulars of a case may not be without interest. The patient is a surfman of one of the United States Life Saving Stations, 28 years of age, a strong, robust man, weighing 200 pounds. He was admitted to the U.S. Marine Hospital at Chicago, Illinois, June 5, 1902, four hours after the injury, and stated that on jumping into the surf boat that morning for drill, the dorsum of right foot struck the gunwale heavily over the first metatarsal bone. He pulled his oar, however, a short time after the accident, or until the exercises were over, and upon rising he was unable to stand on the injured foot.

On admission there was considerable swelling over the dorsum, the contour of the inner border was abnormal, the proximal end of the first metatarsal was not palpable, and the internal cuneiform was unduly prominent.

The following day reduction was attempted under chloroform anesthesia without success, and an X-ray picture obtained, a tracing of which accompanies this paper, showing that the proximal end of the first metatarsal was forced downwards and outwards into the plantar arch, and the distal end of the internal cuneiform upwards and inwards. The separation of the internal cuneiform from the other bones was doubtless due to wedge action of the first metatarsal when driven downwards, and to traction upwards by the tibialis anticus.

On June 7 another attempt at reduction by manipulation was made, the patient being under the influence of an anaesthetic, which also proved unsuccessful, and on June 9, five days after the reception of the injury, reduction was effected through an

opening made by incision. The patient was etherized and an incision seven centimetres in length was made down to the first metatarsal, the proximal end of which was found firmly lodged in the plantar arch, requiring the use of a strong metal retractor, together with much more force than one would consider necessary for the reduction of such a dislocation. This was undoubtedly made necessary, largely, by the contraction of the peroneus longus, which is inserted into the outer side of the base of the bone. This view is apparent from the fact that when reduced and traction was suspended, the bone would slip back again to its former abnormal place; and to ensure retention in the normal position, it was wired to the internal cuneiform.



Tracing of Skiagraph of Outward and Downward Dislocation of First Metatarsal Bone.

Aseptic dressings were applied, and the foot was placed in a plaster cast. Anticipating that the trauma to which the plantar tissues were subjected in the necessarily forcible reduction would give rise to some destruction of tissue, the wound was partly left open for drainage. There was quite a free discharge of serous fluid until the plantar cavity filled up, but no pus infection. The wire sutures came away spontaneously in two weeks, and the patient made a good recovery, with no untoward symptoms except a severe dermatitis on the dorsum of foot caused by the application of liniments made by friends at the time of the accident. The patient was discharged August 1, 1902, and soon thereafter returned to full duty as a surfman.

Under date of January 5, 1903, Dr. William A. Kimmet, Acting Assistant Surgeon, to whom I am indebted for assistance in the treatment of the case, reports that he examined the man in October, 1902, and found the tarso-metatarsal joint firm, so that the patient walked without limping.

THE NEEDS AND EQUIPMENT OF REGIMENTAL
HOSPITALS OF THE NATIONAL GUARD FOR
DUTY IN THE FIELD, PRACTICE MARCHES,
STRIKE DUTY, AND GUARD DUTY IN
THE ARMORY.

BY CAPTAIN VERTNER KENERSON, A.M., M.D.,
ASSISTANT SURGEON IN THE 74TH REGIMENT, N.G.N.Y.; LATE
ACTING ASSISTANT SURGEON, SPANISH AMERICAN WAR;
ATTENDING SURGEON, ERIE COUNTY HOSPITAL; AT-
TENDING SURGEON EMERGENCY HOSPITAL; CLIN-
ICAL INSTRUCTOR IN SURGERY UNIVERSITY
OF BUFFALO.

IT is not at all remarkable that, with the attitude that many officers of the army have maintained toward the Medical Department and the manner with which Congress has at times regarded the Sanitary Service of the Army, it has not been allowed before any war that we have had in this country to make suitable preparation to the end that the sick and wounded could receive proper care in every contest. In times of peace, although soldiers in the army are well and require comparatively little attention, the authorities do not seem to realize that this is nothing in the world but a time for preparation for what is really the serious work. The troops are drilled daily, exercised and gotten into the pink of condition, every preparation made, and yet, while there is plenty of time, and while there are ample funds, no ample preparation has ever been allowed to the Medical department. After the very first battle in the war of 1861 to 1865, scandals began in connection with the treatment of army sick and wounded, and not until ten years after the close of the war did these scandals stop. I think no one understood and appreciated more fully the inadequate means of caring for and supplying the wants of the sick and injured in that war, and in the war of 1898, than did the Medical Department. They were not, however, allowed to make any suitable preparation in advance.

It would be very much beneath the dignity of the government to receive aid and assistance from charitable institutions when their urgent need began. Just imagine church societies, and women's sewing circles, business men's associations, furnishing transportation, furnishing any of the necessities of life to the line and staff in a regular campaign. The officers would easily rise on their dignity and say, "No, thank you, those things are furnished by the Government and should be in sufficient quantities." Just so soon as a man is injured, just so soon as a man is sick, then the United States Government, and all other governments, for that matter, have been very willing to turn the Medical Department, the sick and the injured, over to the tender mercies of charity, where they can be cared for, or they can be neglected, and capital made out of that, both by friends and enemies. I think, in this connection, the old saying might easily be credited a soldier—"Good Lord, deliver us from our friends; our enemies we expect to fight."

This preparation for the care of the sick and injured soldiers leads up to what is the subject of this discussion,—the question of hospitals, their supply and proper equipment, and that in advance of the real need of the hospital. Those things cannot be manufactured in a minute, and yet with all the figures and all the details and equipments of every war easily available on the records, no proper supply of hospitals, hospital tents, cots and general equipments has been allowed and prepared, and furnished transportation to the point of need in a single instance, neither in 1776, 1812, 1861 nor 1898. A large Sanitary Commission was organized in 1861 which undertook to bring to the notice of the public and to the officers what these needs were. I have been reading with a good deal of interest two or three books which go into the details that were found, with some of the remarks made. I quote from one or two of these before I go into the details of what hospitals really require. "The popular opinion of what constitutes a military hospital is very vague, and, in many respects, a very incorrect one. A certain number of beds, a certain number of surgeons, and a sufficient supply of food and medicines to provide all that may become sick or wounded with shelter, attend-

ance and food do not constitute, by any means, all that is required in such establishments. In all countries, some such arrangements have been provided for the care of the sick and wounded, yet hospitals supplied with all these needs have often been pesthouses where the sufferings of the patients have been aggravated rather than relieved. So true was this in former times and so unsuited have such places been proven by experience for the objects for which they were designed, owing to defects apparently inherent in the system itself, that an eminent writer on military hygiene who had the largest experience in the practical management of such establishments a few years ago asserted that hospitals were among the chief causes of mortality in armies, while another with equal opportunities for judging declared that they were the curse of civilization. Unsuitable buildings in unhealthy locations, the over-crowding of patients, want of proper ventilation, deficiency in drainage and water supply, want of proper diet, neglect, or absence, in short, of those general conditions which are embraced under the general term of hygiene,—these were some of the many causes gone into of the failure of the surgical men to treat sick men successfully, who were sheltered from the weather, each of whom was supplied with a bed, and abundantly supplied with such food as would have been nutritious to those in health."

I quote also from a letter of one of the inspectors of that same Sanitary Commission: "From a combination of causes, the condition of the wounded of the battle of Perryville was peculiarly distressing. No adequate provision had been made for their care. The stock of medicines and hospital supplies in the hands of the surgeons was insignificant. They had almost no ambulances, no tents, and absolutely no hospital furniture."

Dr. J. Strong Newbery, in his report to the same Commission, speaking of the inspection made after the occupation of Fort Donaldson, said that in the Fanny Bullitt, a transport, men were found on the cabin floor, side by side, touching, with no mattresses, and no supplies whatever. Their individual condition was deplorable. Some had not been touched who had been wounded four days before, their wounds were fairly rotten; other

wounds dressed three or four days before had not been disturbed. Those who had been cared for were cared for by surgeons overburdened with care, worn out by excess and long continued work without a single article of apparel to give to change their clothing, and not sufficient supplies even to dress the wounds. There were no extra blankets, no stimulants, and their diet was corn meal gruel, hard bread, and no heat or milk.

The equipment for a regimental hospital should be such that men taken sick in the actual marching and actual camp life of the Regiment may be taken care of in the hospital. The hospital should be pitched, in the first place, if possible, on the same side of the camp as the Regimental Headquarters, should have separate sinks, should have a separate cook shack, and hospital corps men should never be allowed to sleep in the hospital tents. The hospital proper, with anybody in the hospital, or with only one or two, should contain one hospital tent, with double fly, fitted with beds and with hospital appliances, and one directly in front of that with flaps attached, arranged for the use of the Sergeant as a pharmacy, and for the doctors, as an office. Both of these tents should, as far as possible, be on a level plot of land, and not a sunken plot, and, if possible, slightly raised so that the drainage will be good. Our [New York] medical supply chest is arranged to carry those things that we actually need, but, for the efficient use of the chest, there should be a table supplied with good strong legs on which this can be placed so that the front lid can swing down and be over the edge of this table. The other end of the table should be arranged as a writing desk, with ink or pencil, preferably with indelible lead pencils, so that the surgeon in charge can write prescriptions and prescribe for the men as they come.

This front tent, pharmacy, should be used always as the tent in which morning sick call is received by the surgeon. This should be at any time that the Commanding Officer desires, but usually should take place before the actual work of the day begins. The men should not be sent to the hospital at any time in the day for minor complaints; all those who have minor complaints such as constipation, blisters, galls, venereal diseases, head-

ache, etc., should be sent at sick call in the morning. The custom of the National Guards is for a man to complain to the Commanding Officer that he is sick and wants to go and see the doctor. The doctor may be caring for some burned case or may be doing some surgical (minor) operation, taking stock of his medicines, arranging his hospital, drilling the hospital corps, or any one of a good many things which are necessary for a surgeon to do to keep his establishment in proper order, and for which he should have the entire day after sick call, except as emergencies arise.

There should be, for every company, a sick book made out, with properly ruled columns, with the Company's letter on the head, and outside of the book, and this should always be filled out by the first sergeant, or the Company's clerk, under the supervision of the first sergeant, at the direction of the Commanding Officer of the Company. There should be a place for the Commanding Officer to sign the book before it comes to the regimental hospital. The Company Commander knows in almost every case what special reason a man has for feigning sickness, to avert a long march, to avert digging trenches, and to avert regular duty, and he should take that into account, no matter how piteous a tale of woe the man tells, or how much he screws his face up. This for the protection of the men who are really conscientious duty workers, and should not be made to do the work of the men who are professional soldiers, and do just as little as they possibly can. This sick book should contain a column for the diagnosis as actually made by the surgeon, and a place for the signature of the surgeon, and every morning at sick call these men should be gathered together by the first sergeant from the various Companies' tents.

After he has secured the signature of the Company Commander to his sick book, they should march over in a regular and orderly manner to the hospital tent for morning sick call. If any man is so disabled that he cannot walk, of course, a company litter should be arranged, and either a squad from the hospital tent, or usually from the Company, should secure a litter and bring the man to the hospital tent. These men should stand at the entrance to the hospital tent, unless they are too sick to

stand, but should remain together so that the first sergeant will have no difficulty in finding the men as each man's name is called.

The first sergeant or a duty sergeant who knows the men should be there to identify them as the surgeon call them from the sick book. This is necessary, as sometimes attempts are made to substitute, and it is quite impossible for the surgeon to know 800 men seeing them only occasionally when they are sick. The first Company arriving at the hospital tent in the morning at sick call, or before sick call, will be called by the surgeon, and the other Companies should await their turn, and not crowd into the tent until the sick from one Company have been cared for. The surgeon will call the name of the man who first appears on the Company's sick book; he will be produced and identified by the first sergeant who if he is well should always maintain a soldierly position, and not sit down on the table, or hang over the medicine chest, or sit on the beds, or anything else,—just remain at attention for duty in this connection.

As the first man is called from the sick book, he should step up so that the surgeon will know which man he is, and, when requested, should tell what his symptoms are, how he received his injury, if it is an injury, and such history of the case as the surgeon may ask, and should not tell the surgeon what he would like and what he would not like in the way of some sweetened preparation for his relief, but, after telling what his trouble is, should leave that to the surgeon who then will write in the sick book the diagnosis of the ailment, and, in the next column, state whether the man should be confined in the hospital, returned to quarters, return to his duty, or be favored with light duty.

All patients who have once appeared on the sick book should appear there every day until the surgeon marks them "duty." The sick book is incomplete that one day marks a man "quarters" or "hospital," and the next day the man's name does not appear at all, and the first sergeant reports verbally that the man has returned to duty. If, in the interval between the morning sick calls a man entirely recovers and wishes to take the responsibility, and the Commanding Officer also does, he may return to duty, but, if he objects to being returned to duty, the Commanding Officer

would not be justified in insisting on his returning to duty, without the surgeon's approval, which is always given in the morning sick book. If a man remains in the hospital for two, three or four days, or a week, his name should appear every morning in the sick book; the first sergeant should bring that over at sick call, and when the man's name is called the first sergeant should respond "The man is in the hospital," which can then be corroborated by the hospital sergeant and surgeon in charge. If the man has been returned from the hospital to his Company's quarters by the surgeon and has failed to report there, the discrepancy is immediately discovered, the man is reported absent without leave, and proper steps can be taken to apprehend him.

If the man has been prescribed for by the surgeon, he passes the prescription to the hospital sergeant who stands by, and the man himself retires to the outside of the hospital or under the fly, and remains there until the prescription, has been compounded, and the directions prepared; then he calls the man's name a second time and he comes forward and receives his medicine and returns to quarters, to duty, or to light duty.

If a man is assigned to the hospital, he at once reports to the hospital sergeant who is always present in the hospital tent and who will direct him to a bed in the hospital which is just in the rear of the pharmacy. In a hospital tent, especially with green troops just starting out for a day's march, for practice march, or strike duty, or any other duty which they are called upon to perform, there should be a little more ample preparation made for their care than would be necessary for troops seasoned in service. No attempt should be made to coddle or coddle complaints to keep the men from actually getting hardened to the service as soon as possible, but every effort should be made to make men comfortable and minister to their needs, so that as much service can be obtained from them as possible.

The medicine chest should be fully equipped, carefully gone over just before leaving, to be sure that all those things that are necessary for the care of the unacclimated and unseasoned are in the chest. The hospital tent should contain, beside the medicine chest and table on which the medicine chest should rest and on

which the surgeon prescribes, one more good sized table, preferably a folding table like the other one, and should contain six beds in the one tent, and there should be six more beds ready to be used, and a second tent can be pitched on short notice, if the need should arise. It is quite a different question to care for sick or injured men in the field any more than for a very short time on the ground.

There should be supplied for every regimental organization a dozen or two dozen substantial, well-made, folding cots with wire springs of good quality, with head and foot boards. These should be at least 6 feet 3 inches long. The ordinary cot furnished by the stores is about 5 feet 10 inches to 6 feet long, and this is not long enough for many of the men in the regiment, especially if the man has any dressings on a foot or a head. Besides these cots, there should be furnished a thin, easily rolled cotton mattress for each cot, and these should be a part of the regular equipment of every regiment, and should be constantly kept in good condition. Each man is supposed to have a blanket sufficiently thick and warm to keep him comfortable in good health, but, as soon as a man's forces are depleted by sickness or injury, extra coverings are necessary, and at least one double blanket, all wool, and of dark color, should be furnished for each cot, and the man's blanket should accompany him to the hospital, if he is seriously injured or seriously sick. With each one of these cotton mattresses should be a small hair pillow, and, I believe, for the sake of economy, in caring for these cotton mattresses and hair pillows (which are both furnished the German army, by the way,) there should be well made and substantial pillow slips and sheets for hospital use only. This is a refinement, but in the end an actual economy, because when any man is injured and any blood or matter from the wound gets into the coverings which are put over him it is not sanitary to use that covering again without its being properly washed. Sheets can be easily washed and dried and blankets cannot be easily washed and dried, and if they are, with difficulty, washed and dried they usually shrink materially and their life is much shortened. Beside the equipments, then, of a sufficient number of cots and mattresses and

hair pillows, of which I think there should be twenty-four for every regiment, with twice that number of sheets and pillow slips, there should be in any camp where men are to be kept for any length of time four or five canopy mosquito nets. This was proven especially necessary in the Spanish-American war, and is deemed of a great deal of importance in regard to those diseases which may be transferred by mosquitoes and flies, namely, typhoid fever and malaria, which are the two camp fever diseases which were responsible for more deaths in the civil war than were the bullets of the Southern Confederacy. These mattresses should be arranged so that they can be rolled up into snug, small packets, and if camp is changed every day are immediate equipment for making the bed as soon as camp is pitched again.

There should be furnished with every hospital equipment for regimental use, at least three bedpans and half a dozen urinals, with one large slop pail for every hospital tent. These large slop pails should never be emptied in the neighborhood of the hospital tents, but should always be carried by the hospital corps men to the sinks, and should be disinfected every time they are emptied. There should be an ample stock of towels (four dozen all in good condition would answer the requirement). There should be one pail and two wash basins which would fit inside of that pail used just for the purpose of cleanliness, just for patients. These should not be used for solution dishes, pus basins, or for anything except for the purpose of cleanliness. The hospital sergeant should see that these are carefully packed away each time; the pail should be used for nothing else unless it is to wash out sheets, pillow cases or towels, except for personal cleanliness for the men.

Cooking arrangements for hospital equipment in the field should be very much more complete than are allowed for the Companies. When a man is taken sick and sent to the hospital, it is quite insufficient, so far as his needs are concerned, to send with him his little tin outfit containing knife and fork and platters. The things that one requires when he is sick are things that absolutely cannot be prepared or served in this sort of equipment. All the food that is furnished by the Army and by the Guard is furnished

with the idea that the men are well, in good health, and able to digest and care for solid food, which, of course, is the most concentrated form of food and easiest of transportation. When men become sick, however, usually the first sicknesses that take men in the field and on strange foods, are intestinal complications, usually gastritis, enteritis, gastro-enteritis, acute diarrhoea, attacks of dysentery, cramps and prolonged diarrhoea from fatigue and improper food when the acute diarrhoea has not been properly treated. The food and treatment for these cases should be, in every instance, some liquid diet, and it should be prepared in some palatable and digestible form.

This leads me to speak of the supplies that should be furnished to a hospital establishment, and which should, of course, be used for the sick, and should not, in any event, be used for the officers or for the hospital corps. It should include a bountiful supply of canned soups, including beef extracts, evaporated milk, condensed milk, and within the length of the cable tow of the commissary fresh milk should always be supplied to the hospital first. There should be numbers of small packages of wafers, saltines, in sealed packages that will remain dry and crisp for a long time, no canned fruits whatever or jellies or preserves, but a bountiful supply of those things that go to make up a plain liquid diet. The best cook in the Regiment should be attached to the hospital squad. He should be taught to prepare all sorts of broths, soups and light foods, including the gruels, custards, soft puddings and light stews. These should not only be well prepared and thoroughly cooked, but should be very palatable. This cook should have supplied to him at least a dozen extra cups, saucers and spoons and small waiters, with extra tin plates and things* to make the preparation and serving of light foods palatable and digestible

*The following letter was on April 20, 1904 addressed to the Commanding Officer of the 74th Regiment, N. G. N. Y.:

In accordance with instructions received from you personally, I have reviewed the paper which I submitted to the Board of Officers about one year ago, in which some recommendations were made for the proper equipment and conduct of a Hospital for a Regiment of the National Guard and after that review and in the light of further study in the same direction I have the honor to recommend the purchase at such times as are convenient the following list of articles.

to sick men. There should be a close line drawn between what is for the hospital corps which should, of course, have the same rations as do the Companies, and the sick men, and a careful watch should be kept on the economical distribution of these supplies furnished especially for the sick men. When a cook who has once been thoroughly taught is able to prepare these things and has been assigned to the hospital corps, it is always necessary, besides the cook, to have one or two assistants in the cook shack. These should always be privates and not non-commissioned officers. The cook himself should be a private always, and the general charge of the working of the cook shack, preparing the supplies, issuing supplies, and everything connected with the general management should be entrusted by the officer in charge to a non-commissioned officer, who should not be expected to undertake any part of the menial work connected with the shack or with the preparation of the food or serving of it. This man, as

It is well known that the usual service of the Regiment is in the vicinity of our own home or at least in our own State, and from various sources every regiment has a certain amount of income, and with our beautifully equipped Armory at our service we should be able to accumulate there such stores and equipment as would make it possible for us always to care for, and care for with comfort to the patient, every man who would in the course of strike duty, be assembled there.

As you know there are two large rooms on the floor where the Medical Department of the Regiment is stationed that we could use as Hospital room and with all the conveniences on the same floor and with every convenience that we have in our modern hospitals, except the actual hospital furniture.

Inasmuch as this is the case, I have made out the following list which can be partially or wholly used for our usual field service in the Summer and the rest stored and when we want the same we will find that we shall more than be paid for the small expenditure of time and money.

24 Daily Sick Reports bound 96 sheets to a Book and bound strongly and covered with an oil cloth covering to protect the cover, copy for ruling for the leaves, and "directions" for the use of the book enclosed herewith.

12 Black Iron framed folding cots, complete with woven wire springs arranged so that they may be folded and packed for shipment, 6 feet 6 inches long and three feet wide.

12 Cotton Mattresses three inches thick and 6 feet 6 inches long by three feet wide. These must be arranged to roll.

12 Feather Pillows.

48 Sheets (single.)

48 Pillow Slips.

2 Folding Tables, 24 by 36.

2 Folding Tables, 24 by 24.

I understand it, should usually be a quartermaster's sergeant who is assigned to the corps, under new regulations. He should be excused from drill as he will have all that he can attend to to look out for his tentage, preparation of beds, and the general outlook of the camp, the hospital sergeant's duties being those directly connected with the care and proper superintendence of the sick. The men who are on duty in the hospital with sick men should be excused, as well as the cook, quartermaster's and hospital sergeants, from drill when their duties interfere with that. I have spoken somewhat in detail of what is actually required in actual hospital experience, because all of those things are not furnished by regulations, but necessities have shown, in every instance, that they had to be secured shortly after, if the hospital was to be satisfactorily and economically conducted, in a way that would preclude complaints.

6 Camp Stools.

1 One dollar Alarm Clock, with a second hand on the face.

3 Galvanized Slop Cans, with handles and covers.

2 Galvanized Iron water pails of sufficient size to take in the wash basins next described.

4 Agate ware Wash Basins, that will nest in the pails described above.

48 Good Towels marked "Hospital," free from fringe but hemmed.

12 Silver Plated Knives.

12 Silver Plated Forks.

2 Silver Plated Table Spoons.

12 Silver Plated Tea Spoons.

12 Black Enameled Trays 16 by 18.

12 White Enameled Cups of medium size with handles.

12 White Enameled Plates medium size.

4 White Enameled Quart Pitchers.

2 Pepper Shakes.

2 Salt Shakes.

3 Chests 36 by 18 by 18, with bolted hinges and handles and padlocked marked "Hospital Hardware," "Hospital Linen" and "Hospital Dietary."

12 Extra Heavy Gray Blankets marked "Hospital."

1 Quart Coffee Pot.

1 Quart Tea Pot.

1 Kerosene Stove with two lids.

3 Kerosene Lanterns.

1 Two Gallon Can for Kerosene.

1 Nest of four small handled Kettles for broths and poultices.

"THE DEGREE OF DOCTOR OF PUBLIC HEALTH."

By PAUL FITZSIMONS, M.D.

MEDICAL DIRECTOR IN THE UNITED STATES NAVY.

THE title of this paper was suggested by a recent editorial in the *Medical Record*. It was forcible, but some amplification may be pardoned, if only a few of this influential association should become interested, for the first time, in the subject.

It may be taken for granted that, in the enormous field now covered by the medical profession, specialism is not only advisable, but demanded and it may not be denied that the practice of sanitation and hygiene would be one of the most important. Naturally the subject would be taken up by a medical man, and if post graduate courses were established, and a degree of D.P.H.—Doctor of Public Health,—given on passing a satisfactory examination, the place would seek the man. Not only some, now filled to a degree by incompetents, but many positions of honor and responsibility would arise, as the community realized that prevention of disease is more important and economical than its cure; and it may not be Utopian to think of a future, when not only communities would pay for prevention of disease, but individuals would follow the Chinese plan of paying when well and not when sick.

The sanitary expert should be a salaried instructor to the individual public, replacing to some degree the medical adviser of the family, making it his duty and interest to carry out the law and explain its necessity without fear of personal unpopularity or of advertising himself. Politics would be eliminated. Busy practitioners would not be called on to give their time to a health board with a minimum of knowledge and no remuneration and the executive officer of the board would not be a plumber with a good salary. The public at large must realize the im-

portance and be educated to the necessity of a change, before it will consent to be inconvenienced to a greater extent or even to a lesser, when influenced by their fears. The public attitude is an unreasoning fear of "microbes" generally, and an indifference to some bacilli they should dread. That bacteria are omnipresent is known, but it is not known that nearly all are innocuous and many useful for some purpose, especially for breaking up complex bodies and reducing them to simple elements, for purposes of nutrition. If it was known that the pathogenic varieties were few and the exact knowledge of these disseminated, panic would be averted, interference with commerce lessened, and gunshot quarantines become a thing of the past. Fear of filth is widely spread and does good if it stops nuisances and promotes cleanliness, but filth does not generate specific disease. Dirty streets are a nuisance and people know the wind often drives infected dust, but to make sure of its thorough distribution, streets are swept, instead of being washed.

The Federal Government in a large sense is the ideal health protector, and the results show that public education has reached a certain point and is expanding. Law-makers must know the necessity, before they will pass the necessary laws and appropriate money for carrying them out. No law however can be enforced if it is opposed to public sentiment, and the diffusion of knowledge is shown farther, in lessened friction with State Boards.

A National Board of Health was organized in 1880, but no money was appropriated and it quickly expired.

The Marine Hospital Service was reorganized on a good basis in 1871. Examinations for entry and promotion, life tenure, and fair play were established. It has increased steadily in importance. Its title was changed in 1902 to the U.S. Public Health and Marine Hospital Service. It controls thirty-seven quarantine and inspection stations, furnishes officers to make investigations and aid the states in stamping out infectious disease. Congress has appropriated a site and \$32,000 for a laboratory to be used in "investigating contagious and infectious diseases and other matters relating to public health." Doubtless its usefulness will increase yearly and its duties become more specialized. The Agricultural Department also does good work directly in

epidemics, and indirectly by educating the public, and controls excellent bacteriological and other laboratories.

Medical men of the Navy and Army from the nature of their positions, and by regulations, are health officers of special public services. The Navy is dependent on its own resources, and efficiency demands a constant effort to keep at least abreast of the times, in order to protect the health and lives of large bodies of men, committed absolutely to its care, with no opportunities for professional consultation, or reference to specialists. Young men entering the service now, are much better equipped, than in the past. Advances in science are so rapid that year by year they start on a higher plane, but European as well as our own governments have found it necessary to establish schools for instruction more especially in sanitation and hygiene. Some years ago a school was established at the Naval Laboratory and it is now replaced by one in Washington on broader lines, thus enforcing farther study in sanitation and hygiene by those entering the service and enabling others at intervals of their career to increase their practical usefulness under favorable circumstances.

The use of iron instead of wood, of electricity for lighting and secondary machines, and other improvements due to the general trend of civilization have simplified some problems and others are in process of solution by a universal elevation of the status of the sailor. He is called on to furnish more intelligence and is treated more intelligently.

In addition much improvement is due to the medical officer, partly by a process of instruction, going on constantly in an association with the younger officers and partly by official relations. His personal equation is important. Some of his ideas may be crude, others radical. He may fail or he may succeed in what he considers most important. His single accomplishment may be small, but the total result year by year is vast and this is, that a Captain is able to grasp the general principles and is willing to carry them out.

Only recently the Surgeon General has been "granted representation, in an advisory capacity, in relation to matters of construction." Hitherto the medical officer reported defects and made recommendations when the ship went into commission and it is safe to say that up to the time when it was generally too late,

very little thought had been given to the avoidance of strong predisposing causes of disease.

A battle ship is a floating, armored fortress, carrying guns, ammunition, machinery, boilers, coal, water, and stores of all kinds. When the hundreds of different spaces are filled, enough room is left on the berth and gun decks for 700 or 800 men to sling their hammocks, after the fashion of a layer of sardines. Sleeping quarters must be restricted, and it is a most difficult problem to ventilate them with a fair success. The quantity of fresh air entering depends on the size of the inlet and number of revolutions made by the fan, and when this only is considered draughts are the rule.

Many troubles confronting an Army officer are absent. Food is abundant and usually good, cold storage room making fresh meat possible, cooking is fair and being improved, disposal of excreta easy and water is excellent, a plentiful supply being distilled. In case water for drinking or cooking is obtained on shore, the Regulations require the Medical Officer, before it is brought on board, to "report at once if any doubt exists as to its purity." Up to 1880, water was usually brought from shore on the Asiatic Station, and caused so much sickness and invaliding from gastro-intestinal diseases, that its use has since been prohibited.

If an infectious case occurs on an artificially crowded ship, a prompt diagnosis is required, isolation is difficult and extraordinary care is required to prevent an epidemic, but the food and water is known to be good, and the source of infection must be extrinsic, that is brought on board by a man from liberty. There was practically no sickness in the fleet during the blockade off Santiago. On the Brooklyn the sick list was less than 2%, and most of the admissions were for injuries. The men were hard worked, keeping up steam, night watches and coaling ship in a tropical sun.

An attempt has been made to show that the military services have realized the necessity of establishing schools for instruction in Sanitation and Hygiene, and that Congress has established a corps of Public Health officers. If the good work goes on, we will reach the ideal point where medical men will prepare themselves for this specialized work, when the public will insist on their employment.

THE UNITED STATES ARMY GENERAL HOSPITAL
AT THE PRESIDIO, OF SAN FRANCISCO,
CALIFORNIA, 1901-1902.*

By COLONEL ALFRED C. GIRARD,

ASSISTANT SURGEON GENERAL IN THE UNITED STATES ARMY.

Part 1.

DURING the year the buildings† destroyed by the fire occurring June 10, 1901, comprising patients' dining room and kitchen, bakery, cold storage room, Ordnance and Quartermaster store room, carpenter and paint shop, Hospital Corps dining room and kitchen, Ward "F" and a portion of Ward "G", were replaced. Ward "F" was entirely remodeled for the purpose of using it as an isolation ward for infectious diseases. It has been used for this purpose and also as an officers ward. Three sets of quarters for Medical Officers on duty at this Hospital have been constructed, one single set for the use of the Commanding Officer, and a double set. The grounds about the officers' quarters have been graded and planted, and the surroundings of the General Hospital improved in appearance.

This report will be divided for convenience into the following sections:

1. General Administration, comprising reports of the Quartermaster and Commissary, mechanical department, property office, dispensary, patients' and Hospital Corps mess, printing office,

*The editor is glad to publish this official report of the Presidio General Hospital for the fiscal year ended June 30, 1902, not only as a graphic account of a year's management of a great military hospital and as a record of superb work accomplished, but also as a vivid guide to other officers upon whom the duty of similar management may devolve. The report will be complete in a series of nine parts.

†In the annual reports of the Hospital for the fiscal years ended June 30, 1900, and June 30, 1901, a history of the establishment of the Hospital is given, together with a detailed description of the buildings.

telegraph and telephone office, Hospital Corps and Army Nurse Corps.

2. Medical work of the Hospital.
3. Surgical work of the Hospital.
4. Report of the Bacteriological Laboratory.
5. Eye, Ear, Nose and Throat Clinic.
6. X-Ray Laboratory.

GENERAL ADMINISTRATION.

The general administration of the Hospital, as detailed in previous reports, has been but little changed. Some additional improvements have been made in the running of the various departments whereby less friction has been caused and a better service rendered than heretofore. One of the most difficult factors present in the the smooth running of such a large establishment as this, has been the frequent changes of Medical Officers. This subject was referred to in the last annual report, and at that time a small permanent staff had been on duty at the Hospital for some months. This was found to be of great benefit, as the many small details necessary to the management of the institution were thoroughly understood by these officers, and the work was carried on with but very little friction. During the past fiscal year, however, owing to the exigencies of the service, changes in Medical Officers have been more frequent, thus necessitating frequent changes in the detail of officers. It is without doubt better, in such a Hospital as this, to have a certain number of permanently detailed officers. This is more just to the patients who come under their care and to the service which is expected of the Medical Officers by the government. The Officers who have been on duty at the Hospital, even but for a short time, have, in most instances, quickly learned the necessary rules for the government of the departments to which they have been assigned, and the work has progressed favorably despite the changes in detail which have been necessary.

a. *Report of the Quartermaster.* The following statement shows the exact amounts expended from each appropriation during the fiscal year:

In addition to the work done for which allotments were made,

I would state that repairs of various kinds have been made; roadways about the Hospital have been graded; the grounds about the Hospital have been surfaced, properly graded and sown with blue-grass seed. The fire on June 10, 1901, damaged the grounds and lawns. The work of repair was done by enlisted men.

A chapel and reading room have been finished during the year at a cost of \$3405.00.

The following buildings have been added and rebuilt during the year, contracted for and payments made by the Chief Quartermaster, Department of California:

A new chapel and reading room built at a cost of	\$ 3405.00
Rebuilding kitchen and bakery, (one building)	14319.50
Rebuilding Ward "F"	12981.00
Rebuilding Dining Room and Kitchen	11410.00
Rebuilding detailed men's building	10917.00
Repairs to "Ward G"	1825.00
Building quarters for one Officer	10048.83
Building quarters for two Officers	17896.58

A road around the officers' buildings has been completed; likewise the grounds and lawns about these buildings have been graded and sown in grass seed, cedar trees planted and the grounds otherwise beautified. The work was done by enlisted men.

Allotments made by the Quartermaster General at different times and for specific purposes during the year:

- \$50.00 for installing annunciator in "Ward F,"
- 18.00 for grass seed for lawns,
- 59.38 for repairs to heating system,
- 66.95 for setting up ranges in temporary kitchen for patients,
- 253.86 for installing an additional pump at the power plant,
- 65.00 and \$45.00 for general repairs to delivery wagon,
- 60.00 for constructing hood over range in Corps kitchen,
- 40.00 for the hire of labor to plaster Commissary store room in "detailed men's building,"
- 125.00 for plates and bars for furnace in power plant,
- 20 for repairs to ranges,
- 171.22 for fitting up office and laboratory for Dental Surgeon in the Administration Building,
- 600.00 for making certain changes in the electric system.
- 301.99 for construction of sidewalks around officers' quarters.
- 350.00 for construction of brick gutters around officers' quarters,
- 26.00 for purchase of cedar trees.
- 650.00 for general repairs for fiscal year ending June 30, 1902.

These various constructions and repairs were made systematically to the best interests of the government and in a most economical manner; all empty oil boxes and cans were carefully preserved and sold and the proceeds, amounting to \$70.20, were deposited to the credit of the U. S. Treasurer.

The following transportation by rail has been furnished during the year to patients sent to Fort Bayard, N. M., and Hot Springs, Ark., and to patients returned to duty to join their organization, 510.

Transportation for messenger service, etc., 1560.

Baggage transferred, 3960 parcels.

Clothing issued to patients and Detachment Hospital Corps, \$10652.06.

Statement of funds pertaining to the Quartermaster's Department, expended for the following appropriations, for the fiscal year ending June 30, 1902:

Regular supplies.....	\$ 3501.55
Incidental expenses.....	474.50
Army transportation.....	993.46
Barracks and quarters.....	2042.84

Grand total expended for the year..... \$7012.35

b. Report of the Commissary. The following is a report of the operations of the Commissary Department up to May 31, 1902:

Total number of rations issued.....	81051
Average number of men and women rationed	242
Paid for Hospital supplies.....	\$36026.00
Paid commutation of rations.....	3241.50
Paid for fresh beef and savings	12838.52

\$52106.48

c. Mechanical Department. The mechanical department of the Hospital comprises the steam heating plant, electric plant, ice plant and laundry; and is under the charge of a Chief Engineer, who is aided by two assistant engineers, one civilian and one detailed from the Hospital Corps. He has also under his charge two civilian firemen and one fireman detailed from the Hospital Corps, one plumber detailed from the Hospital Corps, an electrician and one man to assist the plumber.

The power plant consists of two 150 horse power water tube boilers, two high speed automatic engines 8"x12", coupled direct to two direct current generators of 48 kilowatts each, having a total capacity of 640 amperes of current, and supplying the current for all the lights in the Hospital, and Officers' quarters, as well as the power for the electric stoves, static machine, centrifuge, incubator, sterilizer, fans and two motors, one 15 and the other 8 horse power. These motors furnish the power for the laundry machinery, which consists of three large washers, two centrifugal extractors, two mangles and two irons.

The heating system embraces all the buildings and wards, and also furnishes heat for the drying room and ironing machines in the laundry. Each ward has about thirty radiators. The water is heated in a 2000 gallon tank containing a copper coil through which the live steam flows, the flow being regulated by a pressure regulator and the condensation carried back to the boilers by means of a steam trap which is connected to the main return supply. The tank has a 2" supply pipe and a 2" outlet, from which pipes perfectly insulated with magnesia and supplied with expansion joints run to all parts of the Hospital. The temperature of the water is maintained at 180° F. There are 104 faucets drawing from this system.

The kitchen has four large stock kettles, two vegetable boilers, one egg boiler, with a capacity of 16 dozen eggs; also one coffee, one tea, one hot water and two milk urns on which a pressure of 15 pounds per square inch is maintained.

The wards are ventilated by a system of ceiling and floor registers, the latter being connected to an uptake under the floor which has an outlet in the main ventilating shaft, where a strong suction is produced by a steam manifold, creating a suction of 150,000 cubic feet of air per hour, or about 4,000 cubic feet artificial supply per hour for each patient if all the beds are occupied.

The main water supply is brought from the city supply through a system of Jewell filters, and piped to the several wards and buildings. In addition to this filtered system there is a six-inch main for fire protection. On this pipe are connected six fire hydrants with two 2½" outlets on each.

The water for irrigating purposes is obtained from the Presidio pumping station, and a two-inch main encircles the grounds, with stand pipes and faucets at frequent intervals. Both water mains are furnished with a series of by-passes and check valves which insures water at all times.

The ice plant is composed of one No. 5½ Vulcan Compressor with a capacity of one ton per diem only one-half of this capacity is used for making ice, the other half is used in the cold storage room. The daily output of ice is 900 pounds.

The coal consumption from July 1st, 1901, to May 31st, 1902, was 4,852,630 lbs., and the cost of running the various departments was as follows:

POWER PLANT.

- 1 Chief engineer @ \$100 per month,
- 1 Assistant engineer @ \$80.00 per month,
- 2 Firemen, each @ \$60.00 per month,
- 1 Assistant engineer, (Hospital Corps) @ \$10.00 per month ex. duty pay
- 1 Plumber (Hospital Corps) @ \$15.00 per month extra duty pay,
- 1 Fireman (Hospital Corps) @ \$10.50 per month extra duty pay.
- 1 Electrician,
- 1 Plumber's help.

LAUNDRY.

- 1 Laundryman, @ \$55.00 per month,
 - 2 Laundresses, each @ \$25.00 per month and rations,
 - 3 Hospital Corps men, 2 of whom receive \$6 per mo., extra duty pay.
- Total expenditure, about \$231.00 per month.
Average daily output, about 2000 pieces.

d. Property Office. The work in the Property Office has been under the Charge of a Commissioned Medical Officer, United States Army, known as the Property Officer, who had as assistants one Acting Hospital Steward, a Lance Acting Hospital Steward and a Private of the Hospital Corps, the Lance Acting Hospital Steward acting as clerk and the Private as store keeper.

The handling of the Medical property has been conducted in the following manner: Special requisitions for supplies were sent in once a month since February, 1902, previous to which date they were made semi-monthly. Upon receipt from the Supply Depot the supplies were carefully checked over with the packer's list by either the Steward or the store keeper. The invoices from

the Medical Supply Depot were then carefully compared with the packer's list, and receipts, after having been also compared, were signed and forwarded by the Commanding Officer. Supplies have been issued only upon orders signed by the Ward Officers and approved by the Commanding Officer.

A stock book is kept for the Medical Property on hand in the entire Hospital, itemized in such a manner as to show in what part of the Hospital each article may be found and to whom it is charged. This is for the purpose of better enabling the Property Officer to see that no property is in use which has not been regularly issued in compliance with existing orders.

The following is a copy of Article "H", being an extract from Rules for Medical Officers on duty at the United States Army General Hospital, Presidio, S. F., Cal., and its directions, which have been strictly complied with, will explain the handling of property within the Hospital.

"H. CARE OF PUBLIC PROPERTY AND WARDS.

"1 In order to protect the public property of this Hospital from loss and unnecessary damage, Medical Officers will be required to receipt to this Office for all property in that part of the Hospital over which they have control. These receipts will be made upon a prescribed form and will be rendered when the Officer first assumes charge of the property. Careful distinction will be made between medical and quartermaster property, each being receipted for on a separate blank.

"2. Each ward will be furnished with a property book in which will be entered all articles of public property, proper notation being made of all articles received and expended or lost.

"3. Whenever public property is issued from this office, it will be accompanied by an invoice signed by the Property Officer, who will after verifying the property, return the receipt to this office.

"4. If a transfer of property is ordered from one building to another the issuing Officer will prepare invoices and receipts in duplicate. One invoice and both receipts will be sent to the receiving Officer, the other invoice to the Property Officer. The

receiving Officer will sign both receipts, sending one to the issuing Officer and one to this office.

"5. All property received by issue from this office, by transfer or found in ward, as well as all property issued by the officer, lost or destroyed, will be duly accounted for in the property book and also form 'Statement, of Property.' This form will be rendered to this office on the last day of each month, showing the dates of receiving and of disposing of property during the month. In addition, 'Statement of Losses' will be rendered at the same time.

"6. Each Ward Officer will require his wardmaster to verify all public property in the ward on the 10th and 20th of each month. All losses of or damage to property will be promptly reported to this office. So far as possible, damaged property will be exchanged for that which is serviceable, in which case no invoices or receipts will be exchanged. When property is turned in to this office, the Property Officer will give his receipt to the responsible officer."

It is believed that the above method of handling the large amount of public property constantly required for use in so many hands has proven to be the most just and economical that could be devised, since it makes each one, down to the wardmaster, personally responsible for every article of property over which he has control, and from the time of its origination and adoption, no property whatever has been lost or misplaced that could not readily be accounted for.

The buildings used for store rooms for both property and drugs are two temporary buildings moved from the Model Camp, Presidio, and are quite ill suited for this purpose, being old and out of repair, improperly arranged and in an inconvenient location.

e, Dispensary. The dispensary occupies one of the larger rooms in the rear half of the Administration Building and, although small and in no way elaborate for the amount of work done, it is conveniently located and thoroughly equipped with a double dispensing set of bottles and an extra set of glass labels for additional medicines not on the Supply Table. It is under the direct control of a Commissioned Medical Officer with an Acting Hos-

pital Steward in charge and two Hospital Corps Privates, who are pharmacists of more or less experience, on duty as clerks.

The stock of drugs and medicines has been replenished once each month through the property office from the United States Army Medical Supply Depot, San Francisco Cal., and for variety it is believed has been kept up to a high point of excellence, there being carried, on an average, more than one hundred and fifty drugs and proprietary medicines not on the Supply Table.

All medicines and liquors, excepting small quantities for daily dispensing, are arranged according to the Medical Supply Table in a store room designated for that purpose, and are drawn therefrom only as the necessity arises.

The following books are kept in the dispensary; separate prescription books for medicines and liquors, in which prescriptions are duly numbered and filed in the order received; a liquor book, with an accurate account of alcoholics used in the various wards during each month, with amounts and dates of issues, and from which a report is rendered to the Commanding Officer at the end of each month; a stock book, showing the amount of drugs and medicines on hand at the first of each month, the amount received and the amount expended, thus enabling the Steward in charge to prepare timely requisitions for medicines needed and obviating the accumulation of any excess.

The following is a copy of Article "L", being an extract from Rules for Officers on Duty at the U.S.A. General Hospital, Presidio, S. F., Cal., and will explain in full the manner of dispensing medicines.

"L. DISPENSING OF MEDICINES.

"1. Medicines will be administered to patients only by the order of the Ward Officer or Officer of the Day, and a prescription should be written covering such order.

"2. Medicines, with the exception of the articles named below, will not be kept in the Ward in bulk. Each patient will be prescribed for separately, a prescription bearing the ward letter, the patient's name, company and regiment being written and sent to the dispensary. As far as possible, prescriptions should reach the dispensary before 10:30 A.M.

"3. The following articles may be kept in the Medical Wards in bulk provided they are needed:

Alcohol,
Aqua ammoniae,
Oleum ricini,
Potass. permanganate,
Bismuth sub-gallate,
Bismuth sub-nitrate,
Sodium phosphate,
Trikresol.

"4. In the Surgical Ward, in addition to the above, the following articles may be kept in bulk:

Aether,
Antiseptic tablets,
Chloroform,
Carbolic acid,
Collodium,
Hydrogen peroxide,
Normal saline solution tablets,
Oxalic acid.

"5. The labels are to be retained on the containers of the above articles, and if the necessity for the use of any of them ceases to exist, the containers will be returned to the dispensary.

"6. Medical Officers in writing prescriptions for whiskey, brandy or wine of any kind. will give name of patient and the size and frequency of the dose.

"The metric system must be strictly adhered to in writing prescriptions. In the future, prescriptions written in any other system will be returned for correction before being filled.

"The dispensary is open from 6 A.M. to 9 P.M., and during the night one man remains subject to calls from the bell attached to the outer door."

The average daily number of prescriptions dispensed during the year has been about 180.

f. Patients' and Hospital Corps Mess. The personnel of the mess department consisted, for the past fiscal year, of a mess Officer, 1 Hospital Steward, 1 Acting Hospital Steward, 4 civilians and 20 Privates of the Hospital Corps. The mess department includes 2 kitchens and 2 dining rooms for the patients; kitchen

and dining room for the Hospital Corps; supply room and office, and a bakery.

The Steward of the mess has, under the direction of the mess Officer, supervision of the dining rooms, kitchens, and bakery. He keeps the records of this department, receives and issues all supplies and makes proper entry of same.

The Acting Steward, as assistant, supervises the immediate work in the kitchen and dining rooms. Six Privates of the Hospital Corps are employed in the patients' kitchen and three civilians, 1 chief cook at \$60.00 per month, and two assistants at \$40.00 per month, prepare the food for the patients. In the dining room and scullery four Privates are employed. In the Hospital Corps kitchen four Privates of the Hospital Corps are on duty, while in the Hospital Corps dining room three privates are on duty.

The bakery employs one civilian as chief baker at \$50 per month, and one Private of the Hospital Corps, who receives a gratuity of \$6 per month. The oven of this bakery has a capacity of 220 loaves of bread at a baking. Three men can readily bake four bakings per day, or a total of 880 loaves. The bread baked is of excellent quality, two grades of flour being used with the addition of milk which gives a superior grade of bread.

Since the last report of the Hospital the kitchens have been rebuilt and refitted with an entirely new and improved modern plant. In the diet kitchen two steel "Monitor" ranges have replaced the French ranges formerly in use, and are giving excellent satisfaction. Two steel hotel broilers are used in connection with the ranges. Four double jacketed steam kettles, capacity 35 gallons each, are used for oatmeal, puddings, stews and soup stock; two iron steam kettles, each with four galvanized iron perforated vessels for vegetables, with a capacity of 400 lbs., potato, and egg boilers, capacity 240 eggs, complete the steam cooking plant. A set of five nickle plated urns for coffee and tea are also in use. One urn having a capacity of 60 gallons of boiling water, feeds the urns as required. Two urns for coffee and tea have a capacity of 40 gallons, while two smaller auxiliary urns have a capacity of 10 gallons each. In the pantry of the diet kitchen a

number of sheet iron canisters neatly painted and labeled have been placed as containers for different articles of food; they range in capacity from 30 lbs. to 200 lbs. according to the bulk of the various articles used. They make a neat appearance and are a decided improvement over the discarded boxes and barrels formerly used for this purpose. The scullery is connected with the kitchen by a double door. Like the kitchen it has a cement floor. At one side of the scullery a hand elevator with a capacity of 350 lbs., for raising vegetables and coal for the kitchen, is placed. A copper lined trough, 9 feet long, 2 feet 9 inches wide and 14 inches deep, is placed along the center of the floor of the scullery and is used for the purpose of cleaning all dishes for one dining room, etc.

The dining room has a seating capacity of 260 patients, and it has seated over 300 when required. A small room has been set aside, in connection with the dining room, where meals may be served to Medical Officers on duty at the Hospital, and who, by reason of special duty, may be unable to leave the Hospital at meal time.

There has been no change in the method of procuring supplies nor in their issue to kitchens and wards. The system as it has been in vogue at this Hospital for the past two years is entirely satisfactory. Bids are required from all dealers, supplies are carefully examined when received, and no supplies are issued without the signature of the officer to whom issued.

The Hospital Corps kitchen and dining room are entirely separate from the patients' kitchen and dining room. The food of the Hospital Corps is varied, of good quality and well cooked.

The female nurses' kitchen and dining room is in charge of a nurse designated as housekeeper. A woman cook and two Japanese waiters are employed under her charge. The account of savings and expenditures, with a pro rata dividend allowed them from funds received from officers sick in Hospital, is entered on the Hospital fund statement with the account of Hospital Corps and of the General Hospital.

The average cost of subsistence for patients per day has been 38.21 cents, this including 8838 rations at 16.28 cents per ration

drawn for the patients. The cost of the Hospital Corps subsistence per man per day has been 16.78 cents, and of the nurses 17.28 cents per day. The total cost of rations for the patients, Hospital Corps and nurses, including the 40 cent allowance per day for patients, expended in money value, equals for the twelve months \$68,693.30.

g. Printing Office. During the past year the printing office has printed for and supplied the various departments of the Hospital with the 107 different forms common to this institution. In addition, it has printed the general orders, special orders, circulars, letter heads, note heads, envelopes, programs, signs, notices, imprints in regular forms, and whatever printed matter was necessary for the administrative work of the Hospital.

The office is equipped with a 12x15 foot power Gordon Job Press, a Challenge Cutter with 14-inch blade, a Hercules Stapler, outfit for tablet work, and 41 cases of job type. The type is comparatively new, and has been selected for its particular adaptability to the work of the Hospital. It consists of the necessary fonts of type used in "straight matter", with the most useful faces of Gothic and a small series of French old style.

Orders relating to the work of this office come direct from the Commanding Officer. The Commanding Officer also reads all proofs, thus insuring correctness and care in preparation.

The printing office is under the immediate charge of a Private of the Hospital Corps, who, at the close of the year, was doing the entire work of the office. Up to May 1st, 1902, an assistant was detailed but owing to decrease in work the detail was revoked.

Work completed is turned over to the department in which it is used, provided it is common to that department. If for general use it is kept in stock and issued as needed.

h. Telephone and Telegraph Department. Connected with the Hospital is a regular Western Union Telegraph Office, as well as a city official telephone and a pay telephone. Besides these, there are three local systems.

System No. 1: System No. 1 connects the General Hospital with the auxiliary hospital, the lower corrals, for use in ordering ambulances, conveyances, etc., the hospital electric and heating

plant, and the office of the steward in charge of the mess. The lines and instruments used in this system belong to the Signal Corps of the United States Army.

System No. 2: A local system connecting all the offices of the Hospital, Commanding Officer, Executive Officer, Superintendent of Medical Wards, Record Office, Quartermaster's Office, Officer of the Day, Hospital Corps Detachment, Hospital Kitchens and ten wards, is in use. This system is entirely confined to the General Hospital, and the lines and instruments used are the property of the Signal Corps of the United States Army.

System No. 3: This system, known as the Presidio local exchange, connects the General Hospital with the Post Hospital, Presidio, Presidio Post Headquarters, and the quarters of the Commanding Officer of the Hospital. The system is connected with the Presidio local exchange, whereby the general Hospital can be connected with all the offices and departments of the Presidio Post and with the forts in the Harbor of San Francisco, i. e., Fort Mason, Fort Baker, Alcatraz Island, Fort McDowell, Discharge Camp Angel Island, Detention Camp Angel Island, and Fort Scott. The lines and instruments used in this system belong to the Signal Corps, United States Army.

Long distance business is transacted over the official telephone the General Hospital being a regular long distance station.

The personnel of the telegraph and telephone department consists of three Privates of the Hospital Corps: two telegraph operators who work seven and one-half hours per day each, relieving each other respectively, and one telephone operator. At 10 o'clock P.M. the telegraph department is closed and the guard in charge of the Administration Building answers the telephones and transacts the business necessary from time to time until the opening of the office at half past seven in the morning.

The approximate number of Western Union messages sent since June 1, 1901, has been 1300.

The approximate number of Western Union messages received since June 1, 1901, has been 1200.

Copies are kept on file of all messages sent and received since the opening of the office. The office has handled the personal

business of the inmates and employees of the Hospital in addition.

The city official telephone is for the transaction of official business pertaining to the Hospital. Daily reports are kept of the switches made and the business transacted, and these reports are inspected daily by the Commanding and Executive Officers.

Since the last report a telephone has been placed in the Hospital for the use of the public, being a pay station; two convalescent patients are detailed for duty as orderlies at this telephone.

The approximate number of official messages sent over the official telephone has been 4000.

i. *Hospital Corps.* The Hospital Corps of this Hospital is divided into a permanent and casual detachment. The average number of men on duty per day in both detachments during the fiscal year ending June 30, 1902, is given below:

	Daily average strength	Sick
Permanent Detachment.		
Hospital Stewards for duty	3.37	.11
Acting Hospital Stewards for duty	7.14	.07
Privates for duty	147.91	8.38
Casual Detachment.		
Hospital Stewards	1.17	.56
Acting Hospital Stewards for duty	2.04	1.15
Privates for duty	19.48	13.36

CONFINEMENT.

Permanent Detachment.	
Hospital Stewards	0
Acting Hospital Stewards	0
Privates	.77
Casual Detachment.	
Hospital Stewards	0
Acting Hospital Stewards	0
Privates	0

During the year the rules governing the Hospital Corps, which have been published in previous reports, have been observed; and in addition special written instructions have been issued governing the duties of the night and day door guards, watch-

man, Steward in charge of the Corps, and men detailed upon special duty about the Hospital.

j. Army Nurse Corps. The nursing of this Hospital has been performed entirely by female nurses, and the service rendered has been excellent.

The total number of nurses on duty at the Hospital during the year has been 437. This includes nurses who have been temporarily on duty while returning from Manilla. Besides these there have been 69 nurses on temporary duty at the Hospital, making a total of 506. The average number of nurses per month has been as follows: regular duty 36, temporary duty 5, total 41. Divided as to classes the average has been as follows: class 1, 31; class 2, 6; class 3, 3; class 4, 1. The one case in class 4 was the only one on duty at the Hospital during the year.

THE WEIGHT OF RECRUITS.

IN *Militærlagen* for January 1904, Dr. Bondesen considers the weight of one hundred and ninety-six recruits of the Danish Engineer Regiment who were weighed five times in the course of four months (June to September). The average increase of weight was $1\frac{3}{4}$ Kg.; the increase was greatest during the first month; in the second month there was a slight decrease and in the third month again a marked increase, while in the fourth month a considerably less increase occurred. The average weight of the recruits was at first 63.5 Kg. (highest 85 Kg., lowest 50 Kg.). The increase in weight was greatest in the spare, undergrown men and among those who had lived a sedentary life and were unused to physical labor. The largest increase in weight was 10 Kg. The large, stout men showed less increase; in fact some of them presented a loss. The greatest loss in any one instance was 9 Kg.—HANS DAAE.

APPARATUS FOR TRANSFERRING PATIENTS FROM BED TO BATH.

By GEORGE G. CRAIG, M. D.

CONTRACT SURGEON IN THE UNITED STATES ARMY.

I HAVE designed and had made for me a simple apparatus to aid in the administration of the "Brand" and other full baths, which is well shown in the accompanying photograph, and consists of a canvas hammock attached to a windlass, mounted



Apparatus for Transferring Patients from Bed to Bath.

upon a strong wooden frame fitted with smoothly rolling casters. When the patient has been raised from the bed in the hammock, the frame is rolled along until he lies suspended above the tub; the turning of the windlass then lowers him gently and easily into

the water, from which he is, by reversing the process, comfortably and readily removed at the close of the treatment. The apparatus has been in use at the Rock Island Arsenal Post Hospital for over a year and has proven a most convenient and satisfactory addition to our armamentarium.

NOTE ON FILIPINO MIDWIFERY.

By MELVILLE A. HAYS, M. D.

CONTRACT SURGEON IN THE UNITED STATES ARMY

THE Filipino finds his way into this vale of tears through a pathway that is difficult for the mother although usually safe for the child. The medicine man, who is the only doctor among the vast majority of the natives, does not interfere in obstetrical matters, the ubiquitous old woman claiming accouchement as her particular prerogative. These native midwives claim to possess remarkable powers. They visit a pregnant woman and after palpating her abdomen, inform her of the exact date of delivery and the sex of the child. As a matter of fact I have never seen any of them come near to the truth in their calculations.

In cases of childbirth it seems almost a miracle that any woman, attended by a native midwife, can escape rupture of the uterus. When labor begins the pregnant woman is placed on the floor, her knees are flexed, and her head, hands and feet are held by women so as to prevent the slightest movement on her part; then a rope is tied around the upper part of the abdomen, after which several old crones begin to strike and knead the woman's abdomen as if it were a batch of dough. I have even seen a club rolled in a cloth, used for this purpose. After the birth of the child, the mother receives no further treatment.

At one time I was lead to believe that criminal abortion and puerperal septicaemia were very uncommon among the Filipinos, but I now know that the former is extensively practiced while the latter frequently occurs and is usually fatal. I have learned that in performing criminal abortions, the women use the bark of a tree known as the salchichi; this is made into an infusion and nearly always produces the desired result.

Reprints and Translations.

NEW ARTICLES IN THE SWEDISH MEDICO-MILITARY EQUIPMENT.

SWEDEN (Lieutenant-Colonel E. Boman, *Tidskrift i Militär Hälsovård*) has adopted a new first aid packet. It consists of two light double compresses of gauze 6 x 8 cm.; two cotton compresses 8 x 10 cm.; one gauze bandage 8 cm. x 5 m. with a safety pin; an inner cover of gauze and an outer one of Mosetig batiste. The package measures 10 x 6 x 2 cm. and weighs 30 gm. Packages with the same contents, but of greater dimensions, are also prepared and furnished when desired.

Tablets are also to be adopted in both the Army and Navy, on account of which the entire sanitary equipment is to be altered.

The ambulance wagon which hitherto has carried only two recumbent patients is to be altered to receive four such.

Acetylene is to be used for lighting field hospitals and also for regimental headquarters.

A field bottle of aluminum, covered by felt with a capacity of 750 c.c. and weighing 300 gm., is to be adopted.

The ambulance train will also be modified to carry one hundred and ninety-three patients instead of two hundred and forty-six as hitherto.—HANS DAAE.

SANITARY EQUIPMENT IN THE DUTCH ARMY.

IN a recent number of the *Tidskrift i Militär Hälsovård* is an interesting article by Dr. Josef Hammar of the Swedish service upon the medical department of the Dutch Army.

The part relating to transportation is of particular interest and the illustrations referring to that portion of the work are herewith reproduced, showing also the official field hospital and the field chests as well as the uniforms and equipments worn by the sanitary soldiers.

The ambulances are of two kinds, a one-horse vehicle with two very large wheels in which two patients may be carried and a three horse vehicle similar in character to the ambulance of the United States Army in which four recumbent patients may be accommodated.

The litters are well shown in each of the two engravings.

The Dutch Army also employs a wheeled litter quite of the conventional type and forming a

Dutch Army Field Hospital and Four-Wheeled Ambulance.





connecting link between the ambulance and the hand litter.

The hospital tent is rather larger than that of the United States Army and more approaching in size the brigade hospital tent of the Pennsylvania National Guard described in Volume X of the *JOURNAL* by Major Arnold.

It is interesting to note also the employment of the bicycle in connection with orderly duty in the medical department, a feature of medico-military work which has not apparently been taken up for consideration in our own Army, but into which it is certainly worth while to make some investigation. The Dutch Army uses the bicycle only in addition to and not as a substitute for the mounted orderly however.

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**BREVET BRIGADIER GENERAL CLEMENT ALEXANDER FINLEY,
SURGEON GENERAL, U. S. ARMY.—1861-1862.**

Editorial Department.

The Surgeon Generals of the United States Army.

X. BREVET BRIGADIER GENERAL CLEMENT
ALEXANDER FINLEY, SURGEON GEN-
ERAL OF THE UNITED STATES
ARMY.—1861-1862.

UPON the death of Surgeon General Lawson in 1861, Surgeon Clement Alexander Finley, the senior surgeon in the service was at once, on May 1st of that year appointed his successor. Dr. Finley was born in Newville, Pennsylvania, on the 11th of May, 1797. He was the son of Major Samuel Finley of the Revolutionary army, who soon thereafter took advantage of the military land grants in Ohio to acquire a home at Chilicothe where young Finley spent his boyhood and received his early impressions. When he had exhausted the educational facilities of Chilicothe, his father bethought him of a famous college at Carlisle, Pa., which had been established there while his son was yet a babe in arms, by the efforts of Dr. Benjamin Rush, a distinguished revolutionary medical officer, and sent the boy to Dickinson, where he was graduated in 1815. The young student then repaired to Philadelphia for the prosecution of the study of medicine and at the Commencement of 1818, he received his doctorate from the University of Pennsylvania.

The glamour of the War of 1812 still hovered over the military service and he was induced by its fascinations to seek at once an appointment to the medical staff of the army, being commissioned as surgeon's mate of the 1st Infantry August 10, 1818. Upon the organization of the medical department in 1821, he was recommissioned June 1, as assistant surgeon in the army and eleven years later, July 13, 1832, he was promoted to the grade of surgeon.

His service during the forty-three years that elapsed before he was appointed surgeon general was naturally varied and comprehensive. From the time of his appointment to August 1822 he served with his regiment in Louisiana. Then he had a two years tour of duty, to May 1824 at Fort Smith in the malarious wilds of Arkansas. After a few months at Fort Gibson in 1825, he was ordered to Florida, and a year later west again to Jefferson Barracks, Mo. and Camp Leavenworth, Kans. where he remained until September 1828. He then passed three years at Fort Dearborn, Ill., where he saw the beginnings of Chicago rise on the shores of Lake Michigan, and then in 1831 journeyed still farther west to Fort Howard, Wis., whence he was for some time detached as chief medical officer of the United States forces under General Scott in the Black Hawk War of 1832. In 1833 he joined the 1st U. S. Dragoons in the morasses of Florida where he remained until 1834, when he was again ordered for a couple of years' duty at Jefferson Barracks. In 1836 he again joined the forces in the field in Florida, serving at Fort Jessup in 1836, at Camp Sabine in 1837, and at various other stations in Florida in 1838.

Upon the cessation of the operations against the Seminoles in 1838, he took station for a year at Fortress Monroe and again in 1839 he went on duty in Buffalo for a year. In 1840 he had the privilege of beginning a tour of service at Carlisle Barracks, Pa., where he renewed his acquaintance with his alma mater, Dickinson College, returning again to Fortress Monroe for a couple of years in 1844.

In the following year, 1846, he accompanied the Army of Invasion across the northern frontier of Mexico and became medical director of the invading forces under General Zachary Taylor, until temporarily relieved from duty and returned to the north on account of sickness. During the period of his detachment in the United States, he served as a member of an examining board. In 1847 he again returned to Mexico with the Army of Occupation under General Winfield Scott and officiated as Medical Director of the forces at Vera Cruz until again disabled by illness, when he was permanently relieved from duty in Mexico and

ordered to Newport Barracks, Ky. for two years. In 1849 he came to Jefferson Barracks for a third tour of duty and passed the years 1853 and 1854 in St. Louis, closing his service as surgeon by a period of service with headquarters at Philadelphia and Frankford Arsenal from October 1854 to May 1861, when he was appointed Surgeon General and took station in Washington.

During the decade preceding his promotion he was much detached from his station on examining board service. From 1853 to 1855, in 1857, 1860, and 1861, he was president of boards convoked from time to time in New York City. He was also president of similar boards which met in St. Louis in 1856, in Richmond in 1858, in Philadelphia in 1859 and in Baltimore in 1860. His dignity, urbanity and fairness made him a model president for these boards. He was genial and courteous to every candidate and is remembered with the kindest of feelings by those who met him thus at the gateway to medico-military service. At the time of his appointment to the surgeon-generalcy he was in New York in attendance upon an examining board, the other members of which were Surgeons McDougall and Sloan, and before which owing to the crisis in the affairs of the nation, a very large number of candidates had applied to appear.

In 1861, as at the present day advancement by seniority and promotion by selection each had its advocates in the army. Among the thirty officers of the medical corps from Finley the senior to Head the junior surgeon, were numerous men of varied and extensive accomplishments, all of them well qualified professionally and each of whom during the next four years of war, gave a good account of himself,—two of them in the southern army, of which one, Samuel P. Moore, became Surgeon General. But of these surgeons,—says General Joseph R. Smith from whom we quote many of the most important facts in this sketch,—only two seemed to be seriously mentioned in connection with the succession. One of these was Finley who was the senior officer of the medical department; the other, Robert C. Wood, was third below Finley on the Register, but had the advantage not only of being the son-in-law of the former President, General Taylor, and the brother-in-law of Jefferson Davis, but also of being on duty in the

Surgeon General's office when Lawson died, at which time he was assigned to duty as Acting Surgeon General. These personal relationships and his official position in Washington had enabled Wood to make many influential friends, by whom recommendations had been put on file in the War Department. So that many regarded his appointment as a foregone conclusion and very few doubted that, if Lawson's death had occurred a few months earlier, Wood would have succeeded him. But President Lincoln promptly appointed Finley.

It was hardly thought possible that General Finley would keep Wood, under the circumstances, as his chief assistant, because it seemed doubtful whether Wood could give loyal support to his successful rival. But Finley nevertheless did retain him as long as he was Surgeon General.

It was a trying time, as, along with his corps the Surgeon General was about to enter upon a period of great and unaccustomed work; for the duties of every medical officer in time of small garrisons in peace, were greatly different from those of the surgeon in war times; while the administrative work of the Surgeon General's office differed not only in amount but in kind. To fill now the office of Surgeon General a man was needed of large acquirements and broad mind,—a man matured by years and experience, and yet young enough to endure the labors, fatigues, trials and disappointments that it soon appeared would confront the head of the medical department.

At this time General Finley was sixty-four years of age; but of fine physique and good for many years more of service. He at once took up the affairs of the medical department with much interest and in full recognition of the profound importance of prompt and adequate action. He spent many hours in his office, and gave considerable time to seeing the different prominent men, members of Congress and others from whom advantages of legislation or otherwise might be hoped for. Besides this he spent portions of many days, in company with Dr. Wood, visiting hospitals, and selecting buildings to be prepared for hospital purposes.

It was difficult then to decide, and still more difficult now to

determine for exactly what recommendations and legislation affecting the Medical Department General Finley was personally responsible. General Smith remembers clearly that he disapproved of female nurses in the Army. But he was politic enough seeing the demand for them by the community, as voiced by the Sanitary Commission, to yield to the demand. He warmly approved of the system of medical cadets which had been introduced, and considered them of "great service in the field and in hospitals, increasing the efficiency of the Medical Department by an intelligent assistance, and gleaning for themselves an amount of knowledge impossible to be obtained in the study of their profession in civil life except at the cost of the labor of years." He made many recommendations looking to the increased strength and efficiency of the medical department, advising an additional assistant surgeon for each volunteer regiment, an increase of the regular medical staff, the enlistment of civilians as nurses for general hospitals, the attachment of two additional men to each company to attend the sick under the direction of the regimental surgeon, and the harmonizing of the medical department in organization with other staff departments.

An act of Congress was introduced early in 1861 extensively reorganizing the medical corps, and embodying these recommendations of the Surgeon General together with numerous suggestions of the Sanitary Commission. The Surgeon General was raised to the grade of Brigadier General, an assistant surgeon general and medical inspector were provided each with the rank of Colonel, eight medical inspectorships, with the rank of Lieutenant Colonel were established and medical purveyors were duly recognized. This act was passed on the 15th of April, 1862.

As to some of the legislation and orders issued concerning the Medical Department about the date of his retirement, General Finley can be considered only indirectly responsible; for he was summarily ordered away from his office to Boston, some time before he applied for retirement, and Dr. Wood was appointed Acting Surgeon General. The circumstances connected with the relief of General Finley from duty in his office, for which we are greatly indebted to General Smith, are as follows, the conversa-

tion between himself and Secretary Stanton being related by General Finley to Dr. Wood, immediately after the interview.

In preparing for the care of the sick and wounded of the army, General Finley selected Philadelphia, as the place for a number of General Hospitals, and appointed Dr. John Neill, an eminent surgeon of that city to supervise their preparation.

Neill had an enemy, a physician of Pittsburg, and friend and supporter of Secretary Stanton, who as soon as he learned of Neill's appointment wrote a letter to the Secretary in which public and personal matters were much mixed. After complimenting Stanton on his administration of affairs in Washington; and after assuring him of the satisfaction with which the Republicans of Pittsburg regarded his work, and their belief that the just reward of this work would be his nomination as the next President, the letter asked:

"How did you come to place Dr. John Neill as Superintendent of Hospitals in Philadelphia? Neither his character nor his abilities justify such an appointment."

Stanton referred this letter to Finley for report and explanation, and Finley in the usual official routine referred it to Neill for remark. Neill at once instituted a suit for libel against the letter writer, who wrote another letter to Stanton telling him that suit for libel had been brought against himself, the writer, in consequence of a confidential personal letter from him to the Secretary. Stanton at once sent a messenger for Finley who hurried to the War Department and presented himself at the Secretary's desk. Punctilious, stiff and stately in manner, the fine old soldier stood sternly at attention until the Secretary spoke.

"Mr. Surgeon General what has become of the letter I referred to you about the appointment of Dr. Neill as Superintendent of Hospitals?"

"Mr. Secretary, I sent the letter to Dr. Neill for report."

"How dared you, Sir, to so dispose of a letter I sent to you?"

"The letter, Mr. Secretary, took the ordinary official course. There was no dare about it, and I do not permit myself to be spoken to in such a manner."

"You don't, hey, I will show you about daring and permitting. Go back to your office and wait until you hear from me."

General Finley returned to his office as directed, and reported the conversation in all its details to Dr. Wood; in a brief time thereafter a messenger arrived from the Secretary with an order for him to repair to Boston, and there await orders. General Finley proceeded to Boston, and thence, in various ways, appealed against the treatment he had received. Senator McDougall brought up the matter in the Senate; but the friends of Mr. Stanton were able to stifle inquiry or action, until, after some time, General Finley, hopeless of justice and redress, asked to be retired, and was, the day before the passage of the reorganization bill placed upon the retired list after more than forty years service, under the provisions of the Act of Congress establishing that list for the United States army. Forty-four years of military duty, with three wars to his credit, had well earned for him the right to rest for the remainder of his days. His retirement, however, did not mean entire oblivion, for three years later he received at the hands of a grateful country the brevet of Brigadier General "for long and faithful services in the army."

General Finley was first and foremost a physician and a most accomplished therapist. His devotion to the sick and his absorption in his work were remarkable. As medical director in the field during the Black Hawk war, he received the official thanks of General Scott for saving the army from destruction by cholera which raged among the troops with such virulence that the operations were known as the "cholera campaign." It was at this time that General Scott found him one day so nearly worn out by many consecutive hours attendance upon the stricken soldiers as to be almost powerless. Appreciating the condition the General insisted that the Doctor should go to his tent, and placed a sentry before it with orders "not to allow any one to disturb Surgeon Finley for twelve hours." Dr. Finley believed that by giving him this rest, General Scott saved his life.

In his youth General Finley was known as "the handsomest man in the army." He was six feet in height with a well proportioned figure and a thoroughly military bearing. His eyes were blue, his complexion ruddy and his hair black until the weight of years blanched it to a silver white. He wore during most of his service what were called military whiskers, that is, the

whiskers at one time prescribed by Army Regulations for persons in the military service, viz. extending in a curve from the tip of the ear to the corner of the mouth. Habitually he wore a military cap, was strictly attentive to every minutia of the Regulations, rather bordering on the martinet, and indeed more military than General Lawson himself. He was extremely religious and a strict disciplinarian, but very tender hearted and lovable in his family to which he was deeply attached. His character was upright and his disposition generous; his manner courteous and his conduct always that of a gentleman of the old school.

After his retirement he made his home in West Philadelphia; here for eighteen years he enjoyed the *otium cum dignitate* which he so richly deserved and here finally he died on the 8th of September 1879.

THE WALTER REED MEMORIAL ASSOCIATION.

TO enable them to more fully carry out the project to erect a suitable memorial to the distinguished demonstrator of the method of suppressing yellow fever, the officers actively interested have formed a corporation known as the Walter Reed Memorial Association of Washington, D.C. The officers of the organization are, President D. C. Gilman of the Carnegie Institution, President; General George M. Sternberg, U. S. A., Vice-President; General Calvin De Witt, U. S. A., Secretary; President Charles J. Bell of the American Security and Trust Company, Treasurer; with an Executive Committee consisting of the Officers and Major Jefferson R. Kean, U. S. A., Major Walter D. McCaw, U. S. A. and Dr. A. F. A. King. Under the direction of the new corporation the campaign for the completion of the project is now being actively carried on. Each member of the Association of Military Surgeons either has or will soon receive a letter from General De Witt inviting his personal cooperation in the work. It is hoped that the response upon the part of our members will be prompt and generous and demonstrate that esprit de corps which is particularly appropriate in view of the fact that Major Reed was an active and interested member of the Association of Military Surgeons and a valued contributor to its work.

MEDICO-MILITARY MATTERS IN CONNECTION WITH
THE RECENT MEETINGS AT ATLANTIC CITY.

MEDICO--MILITARY matters were very much in evidence at the recent medical gatherings at Atlantic City. The Surgeon Generals of the Army, the Navy and the Marine Hospital Service were invited to be the guests of honor at the meeting of the American Association of Medical Editors at which the services were represented respectively by Surgeon General Wyman, Surgeon Stokes, Major Borden and the Editor of the *JOURNAL OF THE MILITARY SURGEONS*. At the literary session the medico-military department was represented by a paper on "Military Medical Journalism at the Beginning of the Twentieth Century" by Major Pilcher; and at the banquet in the evening Surgeon General Wyman responded interestingly to the toast "The Public Health and Marine Hospital Service;" Surgeon Stokes, in response to the toast "The Medical Corps of the Navy," described attractively the work and functions of the Naval medical officer; Major Borden responded in his usual felicitous vein to the toast "The Medical Department of the Army;" and the editor of the *JOURNAL*, in response to a toast relating to military medical journalism, assured the gathering of the active interest of the military medical press in everything that could conduce to the furtherance of the service of the sick and wounded in war and peace. Upon the following day the Secretary of the Association of Military Surgeons was elected First Vice-President of the Editors' Association.

The American Medical Association also manifested much interest in military medical matters. A magnificent subscription list, amounting to no less than \$7500.00, was rolled up in a short time for the Walter Reed Memorial and a general session was devoted largely to a symposium upon the relations of the public services to the medical profession, in which papers were read by Colonel Vaughan of the University of Michigan, representing the medical profession at large, and by Surgeon General Wyman, Major Borden and Surgeon Stokes as representing the Public Health and Marine Service, the Army and Navy respectively. If during the past the public services have been too much apart from

- the general profession in their work and objects, this can hardly be said for the future if the admirable plan thus inaugurated of mutual discussion and support be continued. The Military and Naval physicians are as much a part of the medical profession as is the surgeon, the ophthalmologist, the orthopedist, the laryngologist or any other medical specialist. They are however, distinctly specialists and as such must needs be recognized and considered by the profession at large. The Association of Military Surgeons congratulates both the public services and the general profession upon the cordial sympathy manifested between them at this meeting and ventures to express a hope that the full recognition of the mutual interest existing between them may henceforward prevail in America.

POISONING FROM CANNED MEAT.

IN the *Norsk Tidsskrift for Militar Medicin* Messrs. M. Geirsvold and Th. Steenberg quote the case of an epidemic of one hundred light cases of gastro-intestinal fever coming on during the march of a battalion in 1901. The cause was found to be the conserved foods used for dinner. The cans had apparently been all right and their contents of good quality, being composed of fresh meat with soup and vegetables. To determine the cause of the poisoning twenty cans of the same lot were carefully examined at first exteriorly and later by close study of their contents. A bacteriological examination with various control tests was made. The culture experiments showed that the contents of the cans were entirely sterile although live microbes were found. Experiments on animals were made without any inconvenience. The authors remark that every normal appearing can is to be regarded as sterile, only occasionally containing live microbes. This, however, does not exclude previous bacterial decomposition which is stopped but not made innocuous by sterilization, which was the case in the epidemic which induced this investigation. To prevent a recurrence of such decomposition the Norwegian medical director has issued regulations requiring the greatest care and the most extreme precaution upon the part of manufacturers of such products—HANS DAAE.

Reviews of Books.

WOUNDS IN WAR.*

THE first edition of Stevenson's *Wounds in War* was brought out at the psychological moment to attract the attention of American military medical officers during the brief flurry with Spain in regard to the freedom of Cuba. It was promptly recognized as an authoritative presentation of modern military surgery and became a part of the equipment of every regimental, field and general hospital in the United States Service. Since that time Surgeon General Stevenson has continued his studies in military surgery upon the lines laid out in his manual, carefully assimilating the lessons of later hostilities, and in particular those of the Anglo-Boer war, until he has created what is rather a new book than a new edition, albeit issued as a second edition of the former treatise. The new work is a quarter larger than its predecessor and has more than double the number of illustrations. It has but one more chapter,—i.e. one on "the use of x-rays in war hospitals,"—but a rearrangement of the text substitutes a chapter on "traumatic aneurisms, arterio-venous communications and injuries to peripheral nerves" for the old chapter on "injuries of the pelvis," which are now considered in connection with the abdomen.

In his preface the author discusses the situation of military surgery in general, adverts to the erroneous impression of some that military surgery is not a specialty, and sums up the true situation by the claim, "that the injuries met with and the means with which and the circumstances under which they [wounds in war] have to be treated, are different on a campaign to those of a

**Wounds in War. The Mechanism of their Production and their Treatment.* By Surgeon General W. F. STEVENSON, C. B., A. M. S. Second Edition. 8vo; pp. 511; 127 illustrations. London and New York, Longmans, Green & Co., 1904.

civil hospital. If this be granted, it must also be admitted that the peculiarities of gunshot wounds, and the circumstances which govern their treatment, have to be learned by study and experience, and that the subject matter of such study and experience may very properly be referred to as 'military surgery'." This is a most important declaration and conforms entirely with the attitude taken by the Association of Military Surgeons of the United States in connection with this point.

The Boer war is a mine of military surgical information from which most of the new material is drawn. The author is in error, however, when he refers to "the four years of the Spanish-American war," which really occupied a few days less than four months, although the consequent occupation of Cuba and the suppression of the Philippine insurrection consumed a considerable time thereafter.

His views upon the pathology and treatment of gunshot wounds are conservative and progressive and are in line with the best conclusions of other modern authorities. He advises the expectant treatment of intestinal wounds, for instance, holding that the unfavorable conditions as regards aseptic surgery and the usually crowded state of the field hospitals during the period when these operations are likely to be of use, are prohibitive.

The chapter on x-ray work in war hospitals is complete and explicit. Skiagraphy is not considered practicable in regimental or field hospitals but is of great importance and value in permanent and base hospitals. The work of Borden during the Spanish war is not referred to, but the lessons of the Boer war are abundantly detailed and the methods of applying the discovery of Roentgen clearly described and illustrated.

The book is so good that a copy should be in the hands of every military surgeon. The temptation to take up its teachings in detail and in succession is great and the iron limits of space alone prevent a fuller discussion in these pages.

Original Memoirs.

THE MEDICAL TREATMENT OF APPENDICITIS IN ACCORDANCE WITH THE MODERN PRINCIPLES OF THERAPEUTICS.

By ENRICO CASTELLI, B.A., B.Sc., L.M.(DUBLIN), M.D.,
WASHINGTON, D. C.

FIRST LIEUTENANT IN THE ROYAL ITALIAN ARMY ; CORRESPOND-
ING MEMBER OF THE ASSOCIATION OF MILITARY SURGEONS
OF THE UNITED STATES AND REPRESENTATIVE OF THE
ITALIAN GOVERNMENT AT THE ELEVENTH AND
TWELFTH ANNUAL MEETINGS.

FROM a group of different reactions disease is clinically constituted, this result being due to the complexity of the organism upon which every element reacts when one of its parts becomes pathologically affected. These reactions take place everywhere: they exist in the organ affected; in the nervous, circulatory and respiratory systems; in the digestive apparatus; in the kidneys; in the liver; in a word, all the organs and all the anatomical elements of the organs become the seat of reaction during any pathological process. To the intensity of the reaction in one organ, more than in that of another, is due the character of the disease and the clinical varieties of the affections thereby created. So that we must always look upon disease,—clinically and pathologically,—in a general way.

Considered in this light, appendicitis does not mean simply an inflammation of the appendix, nor does pneumonia signify merely an inflammatory process of the lungs, but rather an inflammation of the appendix or an inflammation of the lungs represents a reactive process,—the effect of a general cause that has wrought its results in the appendix or in the lungs. This pathological axiom we cannot deny, confirmed as it is by daily clinical obser-

vation, and so when we come to the therapeutical considerations of the disease, we must find them consistent with the maxims of Pathology.

If we regard our judgment as correct in the adoption of symptomatic therapeutics, consisting as it does in an amelioration of the distressing symptoms of the disease, or of its morbid manifestations,—dangerous because excessive,—notwithstanding this satisfaction as to our judgment of the results attendant upon symptomatic therapeutics; still, if we do not from Pathological Therapeutics (*therapeutics causalis*) also seek for the resolution of the pathological *incognita*,—cause and effect of the disease,—our conclusion must remain unsustained. Therapeutics Causalis became, at a later period, modern therapeutics as a natural consequence of modern scientific conquests, personified in Virchow and Pasteur, the founders of Pathology and Bacteriology.

Symptomatic Therapeutics is identical with the therapeutics of Galen, whose aphorisms exist unchanged after so many centuries of medical life.

Its principles are :

Treat heat with cold.

Treat cold with heat.

Treat dryness with moisture.

Treat moisture with dryness,

and, at the present time, all our new discoveries are only successful as they bend themselves to the doctrine of Galen.

So *terpinae* and *ipecac* are valuable drugs in the period of decline of bronchitis because they produce free expectoration.

Jaborandi and *smilax*, and all the diaphoretics are useful, because they produce free exudation,—in other words, because they excite moisture while a dry condition exists.

In a similar manner *analgesinae*, *tolypirinae* *kairinae*, *thermodinae* and all the antipyretics are useful because, through their haemolytic action they decrease high temperature ; that is, they produce cold where heat exists, and so on.

Analgesia, in so far as it relates to therapeutics is the only therapeutic necessity not contemplated by the old medical doc-

trines, and that, of course, is not due to lack of conception of our physical needs, but, in truth, to a lack of the symptoms of physical pain.

In those ancient times, when the Roman, Muzio Scaevola, could smile as he beheld his right arm consumed in the devouring flames, and when the gladiator slave, with his flesh torn in pieces by wild animals, and lying helpless in the arena, could calmly utter his dying words: "Ave Caesar, morituri te salutant,"—to me, it seems that the conception of pain requiring morphine could not then really have existed.

The victories of Virchow and Pasteur the clearer understanding of *causae causarum* has raised modern therapeutics to the level of Science, and within a few years the end of empiricism will be reached.

The followers of Hahneman and Mary Baker Eddy are still the living Kariatids of a philosophical and empirical therapeutics, based on ignorance and credulity. They, too, will disappear as soon as we deprive our therapeutic methods of the non-scientific base.

For the modern physician disease must be the manifestation of a toxic cause.

This toxic cause may be exogenous, that is, it may originate outside the body, or, endogenous, viz: it may originate within the body. In speaking of a toxic cause, or of a toxic product, I mean to include either the chemical products, due to defective metabolism, or the micro-organisms, and the toxinae elaborated by micro-organisms; in a word, all the organic and inorganic elements of exogenic or endogenic origin present in the organism that, from the fact of their incompatibility with the vital functions of the organism, engender diseases therein.

If bacteriology, and the chemistry of bacteriology, and pure organic chemistry were perfect, they would show us that no disease, of a general character, exists, without a bacteriological or chemical foundation; that when, in a disease, the micro-organism itself is not found, its products may still be found, or those of some other chemical elements, the results of altered metabolism.

When the day shall arrive in which clinical chemistry and bacteriology will have become perfected, then will, likewise, be perfected the doctrine of disease, and that of therapeutics. To this period we are approaching, and even now it is nearer than we believe.

Had Lister been a physician instead of a surgeon, Therapeutics would have already become a positive Science, because he would have directed our thought in medicine in a similar rational direction to that in which surgery was guided.

What has Lister done? Conscious of the discoveries of Pasteur, he understood that infections from a surgical point of view were due to a bacteriological cause; that an open wound is an open door to the colonization of microbes in the organism; that the only way of avoiding infections is by rendering the wounded field unbearable to micro-organisms, and so it is that through such knowledge antiseptics has sealed the victory for surgery.

But, in medicine, the final word has not, as yet, been spoken. To my understanding, disease is a closed wound in which the colonization of microbes and the action of toxinae accomplish their destructive work far from our control. The therapeutic equation to be resolved is the same as that resolved by surgery, with the difference that for the term *local antiseptics* must be substituted the term *general antiseptics*, and I regard it as a singular thing that we physicians, with the fact in evidence before us, will too often lose time in trusting to the effect of our prescriptions, while already we treat successfully by the direct injections of therapeutic agents in the blood, syphilis, malaria, diphtheria, puerperal fever, and many other diseases.

These facts demonstrate that internal antiseptics is the basis of therapeutics causalis, and that the blood is the clinical excipient of therapeutic elements, and it being the bearer and transmitter of all toxinae,—endogenous and exogenous,—assimilated from the organism, it follows that we may confide to it, the curative agents whose therapeutic action will reach the most remote regions of the human system,—regions beyond the reach of the knife, or any other remedial agent.

Modern therapeutics must ask of its sister sciences,—bacteri-

ology and chemistry,—a study of the chemical reactions of the blood in different diseases, and in this way discover the therapeutic agent which introduced into the blood may neutralize the toxinae in its circulation.

Of course, in this respect, the term antisepsis possesses a broader signification, and its meaning becomes defined as that of a neutralizing agent of the heterogenous elements causing the disease.

My idea, thus advanced, has been confirmed by personal experiences in different cases.

The appendix must be considered as a tubular ganglion,—taking part in the defense of the organism during infections,—and receiving germs, either from the blood or the lymphatics, and for that reason appendicitis may become a complication in cases of scarlet fever, pneumonia, erysipelas, parotitis and so forth. More than this: In the case of old persons, who were never affected with appendicitis during their life-time, there may be found at the post mortem examination sclerosis of the appendix with seclusion of the appendicular canal. The existence of such a fact is evidence that appendicitis is always the local effect of a general toxic cause.

Hence it follows that the principal aim of our treatment causalis must be in aggression of the infective cause of appendicitis, while in the meantime our symptomatic treatment will reduce the alarming and distressing symptoms of the disease, and favor the course of the natural processes of repair.

Symptomatic Treatment. The majority of physicians of all degrees of eminence in America, and abroad, seem to have selected, as a formula of predilection, for the symptomatic treatment of appendicitis, the following:

- (a.) Internal administration of opium.
- (b.) Local application of ice.

Convinced that this treatment is essentially wrong, I am a resolute opposer of it, and will, in continuance state the grounds of my opposition.

(a.) Opium,—as these physicians say,—is given to quiet the pains, and to check the intestinal contractions.

Now, to quiet pains in appendicitis means to mask the dangers without diminishing them, while, in the meantime, we depress the general nervous activity, and in this way, lessen the natural power of defense in the organism.

According to my view of the subject, the general depressing effect of opium upon the nervous system constitutes an absolute counter-indication to the use of opium, or its alkaloids, in appendicitis. We must not forget that, in all inflammatory processes the neuro-paralysis,—partial or general,—causes to become more rapid the phases of inflammation, and that the final result, sup-puration, is more quickly reached.

If the same amount of septic substance be injected in the posterior limbs of a rabbit, from one of whose legs the sciatic nerve has been previously cut, we may observe that, in the leg deprived of the sciatic nerve, the process of suppuration will have become more complete, while in the leg not thus deprived, the process of inflammation remains in the earliest stage.

So, in the case of two patients, one of whom has been treated with opium, and the other without it, will be observed the reactions of appendicitis in the same correspondingly distinct degree.

As to the action of opium on the intestines, the belief that through it the intestinal contractions become checked, is a physiological misconception.

It was demonstrated long ago by Mr. Pal, an Austrian physiologist, that the putting of a balloon in the small or large intestines of a dog, to whom he had previously administered morphine, caused a considerable increase in the intestinal contractions, which contractions continued even after the resection of the intestinal nerves.

Thus it is apparent that opium and morphine, produce an exciting action upon the intestinal ganglions, and that this action is transmitted to the circular and longitudinal fibres of the intestines.

Such experiments demonstrate that opium, physiologically produces a quieting action upon the intestines on account of its regulating its contractions, and not on account of its paralyzing effect.

Such being the case, opium is also useless as an intestinal neuro-paralytic.

(b.) Local application of Ice.

Lauder Brunton has demonstrated, since the year 1885, that cold applications diminish superficial phlogosis, but that they materially increase deep phlogosis.

A confirmation of this fact is found by introducing a thermometer into the abdomen of a rabbit whose body has been previously covered with ice, after which, a rapid increase of the internal temperature follows.

Thus, as a natural consequence of our local applications of ice in appendicitis, a more rapid course is given to all the phases of inflammation, and, frequently, suppuration, that could have been avoided, occurs, through the employment of our therapeutic resources.

Various considerations regarding the essential trouble in cases of appendicitis, the first of which, is constipation, have guided me in the adoption of my symptomatic treatment in such cases.

Constipation facilitates the auto-absorption of toxoinfective products,—results of the abnormal fermentations taking place in the intestines during any process of coprostasis. As coprostasis, in itself, is sufficient to produce high temperature, thereby increasing the intestinal fermentations, it follows that constipation is the bicornous element that starts and feeds the first symptoms of appendicitis.

The fact that constipation always accompanies appendicitis, and that all patients affected by this disease suffer from constipation, has led me to conclude that the appendix is, perhaps, the governing centre of the secretory intestinal functions, and, for this reason, as well as for other reasons, I am strongly opposed to the new practice of surgery which deprives persons, coming under the knife, of a healthy appendix.

If we do not exactly understand the functions of the appendix, we, nevertheless, know that disease, and the functions of an organ are in direct rapport, and that the pathology of an organ is complicated in proportion to its functional importance. At the

beginning of an attack of appendicitis, I direct my attention carefully to the removal of faecal stasis.

The act of defaecation is the final result of the complex functionality of the digestive apparatus. It is to the co-ordination of the sensitive motor, vaso-motor, and secretory elements of the digestive apparatus that we owe the accomplishment of the defaecative act.

Should we attempt to apply for each element the corresponding curative factor of its depressed functionality, we would become polypharmacists, and our results would be only complete failures.

Which one, then, of these elements must be taken into consideration?

During a general infectious process, two intrinsic conditions are present in constipation, viz: lack of tonus of the muscular fibres of the intestines, and lack of the neutralizing agent of the products of fermentation taking place in the intestines; the two conditions that prevent the mechanical action of the intestines thereby favoring the absorption of their products of fermentation.

In the establishment of these two conditions, two principal causes concur, viz:

1st. A *general cause*, viz: the nervous depression,—the inseparable companion of all infectious processes.

2nd. A *local cause*., viz: the insufficiency or absence of bilious secretion.

Bile, on account of the action of its acids on the intestinal muscular fibres, stimulates intestinal contraction, and, its absence causes and maintains constipation. The products of the decomposition of bile,—especially cholic acid,—possesses a powerful anti-putrid action, equal to that of chloridric acid, for which reason the absorption of putrid products joins itself to constipation in the absence of the secretion of bile.

In the adoption of my symptomatic treatment it is my special aim to provide for the relief of the two conditions above mentioned, and thus, in a case of appendicitis, my preliminary treatment is the following:

1st. The administration of salicylate of sodium; dose 0.75 centigrammes, to be given twice, with an interval of one hour.

Salicylate is a cholagogue, and an anti-thermic.

(a.) As a cholagogue salicylate produces an augmentation in the secretion of bile,—an augmentation whose maximum is reached two hours after its administration. The fluid and solid elements of the bile are increased, but the fluid element increases in a larger proportion, thereby producing a diminution of consistence in the bile, and greater fluidity.

It must, however, be remembered that, notwithstanding the cholagogue action of the salicylate, the elimination of bile does not increase unless we associate with the salicylate the administration of a therapeutic agent, which, stimulating the peristaltic action of the intestines, prevents the absorption of the bile already secreted.

(b.) Although as a rule, salicylate produces a diminution of temperature, yet such a diminution is not always accompanied by a corresponding modification of the pulse. The antithermic action of salicylate is more rapid and pronounced than that of quinine, but requires, however, larger doses, as usually two grammes of salicylate are necessary to produce the same antithermic action as that produced by one gramme of sulphate of quinine. I remember, however, one particular case under my care in which there was a diminution of three degrees of temperature two hours after the administration of 1.50 grammes of salicylate. In order to avoid the irritating action of the salicylate upon the gastric mucous membrane, I use as an excipient, vichy water (Celestins). Three hours after the administration of salicylate, I begin to administer calomel in doses of 0.05 centigrammes each, to be taken one hour apart, until the first intestinal evacuation occurs. Calomel acts as an intestinal antiseptic, as a cholagogue laxative diuretic, and as a stimulant of the pancreatic secretions.

(c.) As an intestinal antiseptic, it destroys the organized ferments without modifying the amorphous ones, (ptyaline, gastric juice, and pancreatic juice). One of its principal advantages as an intestinal antiseptic is, that its antiseptic power increases

with the increase of temperature; in that way, making its action proportionate to the needs of the organism.

(d.) As a chologogue calomel does not increase the secretion of bile, but that secretion is increased because of the excitation given by it to the contractions of the bile-ducts, thus completing the action of salicylate, the value of which, lies in increasing the secretion, but not the excretion of bile.

(e.) As a laxative calomel increases the peristalsis intestinalis already started by the bile, and produces evacuations. I have observed that the colic pains produced by calomel are always modified when salicylate has been previously given; this may, however, be due to the regulating action of bile on the contractions of the intestinal muscular fibres.

(f.) As a diuretic calomel diminishes the hydremia febrilis, and, as a natural consequence, the amount of toxinae in the circulation becomes diminished also, and concurs with the diminution of temperature.

(g.) As a stimulant of the pancreatic secretions it aids in, or accomplishes entirely, the pancreatic digestion of the undigested nutritive elements present in the digestive apparatus at the moment of the attack of appendicitis.

But, as previously stated, another cause concurs in the establishment of the two above mentioned conditions, this cause being the general nervous depression accompanying all the infectious processes, and which, in appendicitis, constitutes a very serious circumstance facilitating as it does, the development of suppuration.

Besides constipation, the pain symptom constitutes another distressing feature of the attack, and to this symptom, more than to anything else, is attributable the use of opium by physicians for its alleviation, and for the purpose of masking to the patient, and to those in attendance, the real dangers of the disease.

The necessity of relieving pain, internal congestion of the organs, depression of the nervous system, and high temperature have induced me to add to the symptomatic treatment of appendicitis the use of warm balneation, and I will state that, so far, its good results have strengthened my opinions in this regard.

The warm bath produces a general tonic sedative effect on the nervous system, in all states of asthenia; it equilibrates thermogenesis; it decongests the internal organs,—produces analgesia,—and relieves all pains of a colic type; besides, it has an antitoxic effect since it increases the reactive processes of metabolism, produces free exudation, also relieves the *iscuriae paradoxae*,—a symptom not uncommon in all infectious diseases.

During an epidemic of cholera in Sicily, in 1884, I used upon myself the hot bath, and was able thereby to stop at once the distressing intestinal cramps, characteristic of cholera, which, even in a small degree, fifty drops of laudanum had failed to relieve. My present regular practice in relieving the pains and general symptoms in any attack of acute indigestion is through the use of the warm bath, and I find it especially beneficial in cases of *pneumatosis gastro-intestinalis* when a syncopal state might endanger the life of the patient.

In appendicitis, I prescribe the bath at any period of the attack, and during it the other symptomatic and causal treatments are producing their effect, because it not only does not interfere with their action, but, on the contrary, becomes to them a useful adjunct.

Also, I prescribe the bath when the most remote suspicion of appendicitis exists.

The temperature of the water varies from 25° to 35°, according to its adaptability to the physical condition of the patient in receiving the temporary nervous shock, caused by an immersion of the body in hot water. Sometimes, I prefer to plunge the patient in a bath at the temperature of 25°, raising it gradually to that of 40°, thus avoiding the shock.

During the bath I gave small doses of cold champagne.

If a hot bath is not at my disposal, I use a hot pack, obtaining similar results thereby.

Pain, and the general condition of the patient form the only guide to the use and length of balneation, as well as to its repetition as often as may be thought necessary.

Does the hot bath always relieve pain? No. It may increase the pain to its highest degree, but such a recrudescence

must constitute a warning for the physician, showing, as it does, the presence of pus in the region of the appendix. In other words, an increase of pain in such a case is the clinical equivalent of suppuration. This fact is common to all kinds of suppurations, and, for this reason, the hot bath or the hot pack may be used as a means of diagnosis of the presence of pus.

Dr. Lewin, of Berlin, relates the case of an inflammation of the knee-joints, following erysipelas, in which tapping did not show the presence of pus in the articulation, but in which the use of the hot pack had increased the pain, and the opening of the articulation revealed the presence of phlegmon periarticularis.

As an adjunct to the relief of coprostasis, I administer, at the beginning of an attack, an enema of warm water and chloride of sodium—solution 5%, temperature from 18° to 28° centgr., quantity 400 grammes—to be injected at a low pressure.

Warm water softens the faecal matter, stimulates the contractility of the intestinal muscular fibres, and excites the rectal secretions. It often happens that the presence of a hard faecal mass in the ampulla rectalis constitutes a serious mechanical obstacle to the evacuation of the intestine; also it occurs, frequently that the removal of such an obstacle suffices to bring on a free intestinal evacuation, but, again it may happen that through the hardness of the rectal faecal mass the topic use of a long spoon may become necessary as a mechanical aid to the action of the water.

I find, also, such a practice necessary at the beginning of labor, when rectal coprostasis constitutes an element of distocia similar to that given by a narrow pelvis. Hence, in general, I prescribe the enemata in the case of a pregnant woman, and this always at the appearance of the first labor pain.

In the case of appendicitis, I continue the administration of the enema every twelve hours; adding to the chloride of sodium equal parts of sulphate of sodium, and so continue until the watery discharge becomes colorless.

Treatment Causalis.—At the present time, a knowledge of the bacteriology of appendicitis teaches us that there exists not only one bacteriological element capable of producing appendi-

citis, but that many other elements likewise exist which must be considered in speaking of the diverse forms of this disease.

Still, we are not yet acquainted with the special characteristics inherent in every form of appendicitis, notwithstanding the certainty of their existence. Appendicitis due to streptococcus must be clinically differentiable from appendicitis due to bacterium coli; just as is clinically differentiable the meningo-typhoid from the tubercular meningitis.

The necessity of recognizing clinical features of a disease according to the different bacteriological element cause of that disease is, at the present moment, acknowledged by the majority of physicians. In France, four years ago, for the first time Dieulafoy described the peritonitis due to streptococcus as clinically differentiable from the tubercular peritonitis.

Such an attempt constitutes a conquest for modern pathology. The clinicians of yesterday were accustomed to think anatomically in the determination of diagnosis, while the clinicians of today must think anatomically and bacteriologically.

Of what use would be the advancement of bacteriology as a science if its results could not be clinically applied?

As in the diagnosis of cirrhosis of Hanot we are guided by our knowledge of the anatomo-pathological condition of the liver in that disease,—so, likewise in the diagnosis of appendicitis we ought to be guided by the anatomo-pathological condition of the appendix and by its bacteriological factor.

Clinicians and bacteriologists must aid each other in the research for the connecting lines existing between clinical symptoms and bacteriological elements, but, unfortunately, bacteriologists and clinicians work apart, and the bacteriologist of to-day is not enough of a clinician, and the clinician is not enough of a bacteriologist. For the progress of medical science the necessity certainly exists that these two factors should work together, as up to this time the anatomo-pathologist and the clinician have already done.

Only, through such harmony of action will it become possible for the physician, who has not the time to acquaint himself more fully with the knowledge of bacteriology to know that such

or such a form of disease is due to such or such a bacteriological element, in consequence of which his treatment of the disease must necessarily, tend toward a neutralization of said infectious element.

But, so long as the causes of appendicitis are many, and our clinical knowledge as to the differentiation of its diverse forms is incomplete, we must take, as a therapeutic guide the general views pertaining to infections, in general.

Call *x* the infective agent, micro-organism, or toxinae; call appendicitis the disease produced,—neutralization of the toxinae, or destruction of the micro-organism must be the therapeutic causalis.

Still the fact that appendicitis is connected with so many diseases having, as a base a specific organism, gives us to understand that the origin of the disease is microbic and that the destruction of its micro-organism will be sufficient to eliminate the cause of infection.

The best way of destroying the source of infection is by rendering the surroundings of the infective agent inadapted to its life and to its reproduction.

As I have before remarked blood and lymph are the bearers and transmitters of any infective element, and the localization of the infective element in a special organ or region of the body is a simple process of metastasis.

The microbes or toxinae, are transported by the lymphatic or blood vessels into such regions of the body as offer conditions most suitable for the accomplishment of their reactive processes, just as in a similar manner cancer cells are transported to those parts of the body wherein may be reproduced the malignant growths from which they themselves originated.

Now, if our therapeutic agent should follow the same route as that followed by the infective element, its action, general and local, would take effect at such points as presented a necessity for its action. Thus, we may confide to the blood our curative agent, while the question to be understood is,—which curative agent is preferable? In my trial treatment I selected the one upon which has been founded local antiseptis, viz., carbolic acid. I would have

preferred the endovenous injections to the intrans-muscular, had not such a practice required special care, much time and ready assistance, all of which, very frequently, are not at command.

The formula adopted is the following:—

Acid. carbolicum.....	0.20 centigr.
Aquam.....	10 gram.
Alcohol pure.....	2

I inject 1 c. c. of this solution every two hours during the attack.

After the second injection I have always observed a diminution of temperature, and also a diminution of the nervous erethism peculiar to the disease. Of course, I cannot, with certainty, say that a great deal is not due also to my symptomatic treatment, and especially to the use of the bath, but carbolic acid of itself, is known to have a paralyzing action on the nervous centres, and its effect is apparently very marked, in all cases of nervous erethism.

Such a diminution of temperature constitutes a mere temporary effect if the general auto-intoxication is still at its primary stage,—in fact, on suspending the treatment, after the first or second injection, we may observe three or four hours later, that the patient is seized with a sudden shivering followed immediately by a rise of temperature.

But, if we stop the injections after their fifth or sixth administration and after the symptomatic treatment has aided in the elimination of the toxic products from the organism, we may observe that the temperature remains stationary. An examination of the blood instituted after the fifth or sixth injection then shows a diminution of the fibrin corresponding to a diminution of its phlegmatic condition—a condition peculiar to all infectious diseases.

Such a haematological result proves that the blood, like any other tissue, resents the effect of antiseptis, and that its inflammatory reaction diminishes when antiseptis diminishes the virulence of the heterogenous elements in its circulation.

The conception, by the ancients, of *haemitis*, or inflammation of the blood, was not altogether wrong, since its phlegmatic condition is present during any infectious disease, and a diminution of this condition always shows a decline of the infection.

In three cases, treated by me, I injected in two of them 0.25 centigr. and in the other 35 centgr. of carbolic acid within the first three days of the attack, continuing the injection of 0.05 centgr. a day during the next six days.

In one case at the third day, and in two cases at the end of the fourth day, the conditions of pulse and temperature, had become normal, and the abnormal rigidity of the abdominal walls had completely disappeared.

Proper regimen and therapeutic care was followed during the convalescence.

The number of cases thus treated is certainly very small to be spoken of in the *treatment of appendicitis*, but the results are not discouraging, and I, therefore, believe that such a course of treatment could be adopted in cases wherein no possibility of surgical intervention exists.

Thus it might chance that during the period of expectation, in awaiting the use of the dread knife,—medical intervention would be sufficient to demonstrate that nothing in this world is actually indispensable,—not excepting, even, the knife in appendicitis.

MILITARY HOSPITALS IN JAPAN.

THE Japanese Government is carrying out its well known purpose of providing the best possible treatment for the sick and injured, not only of its own forces but also of the enemy. Fine base hospitals have been organized at Tokyo, Hiroshima and Matsuyama and Drs. Hashimoto, Sato and Kikuchi have respectively been placed in charge. Dr. Hashimoto is a retired Surgeon General of the Army and Physician in Ordinary to the Mikado, while the other members are among the most distinguished and accomplished of Japanese medical men. These hospitals are organized and conducted according to the latest and most approved modern methods. The nurses are provided by the Red Cross Society and have had the advantage of the careful and intelligent training which these women have been receiving for a number of years. The equipment of the hospitals is equal in grade to the personnel.

AN EXTERNAL SUTURE.

By CAPTAIN THOMAS PAGE GRANT,

LOUISVILLE, KENTUCKY.

ASSISTANT SURGEON, RETIRED, IN THE KENTUCKY
STATE GUARD.

I DESIRE to show a simple dressing, a substitute for the suture, which I devised some fifteen years ago to meet an emergency in the shape of a badly contused and lacerated wound on the forehead of a young man of my town. The results in that case were so very pleasing that I have since used it repeatedly with great comfort to myself, and my patients. I believe that all of us have found that it is such little things that make for success or failure in our profession, perhaps more than in any other. My results from the use of this dressing have been highly satisfactory, as in the majority of my cases I have gotten union with a much less scar than I probably would have gotten with any other dressing.

The material for this external suture are: strips of adhesive plaster,—I like isinglass plaster on muslin best, as less likely to slip or creep on the skin; some ordinary old-fashioned hooks, such as ladies use to fasten their dresses,—old fashioned hooks, not those with a “hump”; and some rubber bands, number 7 or 8 I like best, but if it is desired to make more tension, then a longer or heavier band may be used, and more twists be taken over the hooks.

The plaster should be either $\frac{1}{2}$ or $\frac{3}{4}$ of an inch wide, the narrow being for a single hook, while the wide for two hooks. My experience is that more than two hooks on a strip does not work satisfactorily, as it is too wide to lay well on the surface. The hooks and rubber bands should be boiled to sterilize them, and then put into a bottle and kept well stopped. Your plaster of course is aseptic, and kept so.

Having cut your plaster the desired width, you make two holes for each hook to be used, the holes to be about one inch from one end of strip and a quarter of an inch apart (nearer if small hooks are used), and into these holes the hooks are put, as shown in the sample which you are examining. The rings on the back end of the hooks are to be open so to better catch in the plaster.

Having put in the hooks, you turn the free end of the plaster back on itself, and make a double thickness under the hooks. This prevents the plaster from adhering too close to the wound, and



The Elements of the External Suture.

- Fig. 1.** The Plaster, ready for the hook.
- Fig. 2.** The Plaster, with the hook in it.
- Fig. 3.** The Rubber Band, with which the suture is laced.
- Fig. 4.** The Hook, showing the manner in which the rings are opened.

keeps the hooks from pressing too much on the edges of the wound. The plaster may be as long as is thought best to make the proper tension, going back as far from the edge of the wound as is deemed best to close the wound, and it should be brought to within from a half an inch to an inch of the edge of the wound, not closer. When it has become well "set," or adheres properly, which only takes a minute or two, begin lacing the rubber band from one hook to its fellow of the opposite side, drawing as tight as may be needed to bring the lips together. Then take the next pair of hooks, and so on, until all are drawn together, dust



An External Suture in Use.

1. A single suture, laced, closing the wound. (on face)
2. A double suture, not laced. " "
3. Single suture, laced, with a pad, or compress under it. (on hand.)

the wound with iodoform or other powder and cover with a gauze pad and a bandage.

It may be desirable sometimes to put a pad of gauze under the hooks; this may be done either before the rubbers are tightened, or better after the wound is drawn together. To do this, clip the rubbers one at a time, placing the pad under the plaster, and relacing, before cutting the next rubber. If it is desired to make the dressing waterproof, the plasters may be painted with a little collodion, then they can be washed, if needs be. (A solution of rubber in bisulphide of carbon or other solvent may be used instead of collodion.) But care must be taken not to be in too much of a hurry to begin the lacing before the plaster is well dried else you may pull it loose.

Some of the advantages, that have suggested themselves to me, are :

1. The possibility of using it in many of those cases where the contusion, and laceration is so extensive as to prevent the use of a thread suture,—being especially adapted to contused and lacerated wounds of the face or head, as from a fall or a blow.

2. No slight advantage is the freedom from stitch wounds, and the danger of stitch abscesses, which are so liable to occur in contused wounds from infection at the time of injury, and which the utmost care cannot prevent when the needle is used.

3. The rubber bands allow for almost any amount of swelling, which always occurs in greater or less degree in all contused wounds, and which often calls for the clipping of the stitches before union, and which not infrequently cause the stitches to ulcerate out between the visits of the surgeon. Its use makes it possible to adapt the edges of a contused wound into a normal position, or nearly so, and with the rubber bands to draw the lips together, and adjust them, and if needs be, re-adjust them.

This can be done when this dressing is used with greater ease, and I think with more certainty, than is possible with a thread suture. And that too, in wounds having considerable laceration of the soft parts.

I suppose that there are none of us who have not at times experienced considerable difficulty in closing a bleeding wound

with adhesive plaster, or perhaps even with a needle, on account of the oozing blood or perhaps positive hemorrhage; or at times increased the hemorrhage by the use of the needle in suturing. No doubt but, in cases of contused and lacerated wounds, you have often been obliged to leave the wound open, because the stitches would not hold, and plaster would not stick. In cases of this kind this dressing is particularly effective.

Make your strips of plaster long enough to go well back on the sound tissue, bring it across the contusion to within an inch of the open wound, on each side, and then with the rubber bands draw the plaster together, thereby closing the wound, and making just the desired tension. This will almost certainly arrest the oozing, and sometimes even stop a positive hemorrhage. With this dressing you can regulate just the amount of tension you want on a wound, which is impossible with the ordinary suture, or with adhesive plaster as it is usually applied.

Hence the possibilities of Cosmetic Surgery in many cases of contused and lacerated wounds, are better with this dressing than with either the ordinary suture, or with the adhesive plaster. While this dressing is especially recommended in cases of lacerated wounds, especially those with more or less contusion of the soft tissue which makes it undesirable to use the ordinary suture, it will often be found useful in cases of cuts, both accidental and operative.

And particularly is it useful in emergency dressing, where it is inconvenient or inexpedient to use the needle, on account of the conditions, as the inability to properly cleanse the wound, yet where it is best to close the wound to stop bleeding and prevent gaping, until the case can be taken to a more suitable place for dressing.

This dressing is not offered as a universal substitute for the needle, but in very many cases of minor surgery its use will afford both comfort and success to the surgeon, and save the patient from a large scar, and perhaps from much suffering. And the results will generally be so pleasing that even the omnipresent "Ambulance Chaser" will not be able to criticise it.

THE NEW HOSPITAL CORPS DRILL REGULATIONS FOR THE UNITED STATES ARMY.

By CAPTAIN FREDERICK P. REYNOLDS,
MEDICAL DEPARTMENT, UNITED STATES ARMY.



Private of the Hospital Corps in
Field Uniform and Equipment.

IN May, 1903, a Board of Medical Officers consisting of Major Charles F. Mason, Captain Francis A. Winter, and Captain Frederick P. Reynolds, Medical Department, U. S. Army, was convened for the purpose of revising the Hospital Corps Drill Regulations, to make recommendations for a uniform system of Hospital Corps instruction throughout the Army, and to consider the advisability of providing a knife as a part of the equipment of the Hospital Corps.

The work of the Board was submitted in February, 1904, and was approved by the Surgeon General and Chief of Staff. The schemes for instruction in companies and in detachments have been published, and by direction of the Surgeon General all Hospital Corps instruction will in future conform to these schemes.

THE HOSPITAL CORPS KNIFE.

Nearly all medical officers reported in favor of a knife as part of

the Hospital Corps field equipment, only six recording themselves as opposed. The objections of the latter were : that the knife added weight to the equipment, that it was unnecessary, and that its use was in violation of the Geneva Convention. Concerning the first of these objections, the Board is of the opinion that the additional two pounds will not be a burden to the Hospital Corps man, his equipment being much lighter than that of other soldiers, and that the utility of the instrument more than counterbalances the



Hospital Corps Squad Showing Equipment.

additional weight. In reply to the assertion that the carrying of a knife by a neutralized person is in violation of the Geneva Convention, the following opinion of the Judge Advocate General of the Army is submitted. "The knife which it is proposed to issue to members of the Hospital Corps is intended to be used, primarily, in the performance of their duties and is not intended as an offensive weapon, though it is susceptible of use in self defense should occasion for such arise. The persons who are neutralized by the Geneva Convention enjoy the privileges con-

ferred by that treaty while they are engaged in performance of certain duties in respect to the sick and wounded in time of war. If they take part in hostilities, and use any weapon whatever *against the enemy*, they forfeit their privilege; but the mere possession of side arms to be used solely in self defense or in the performance of their legitimate duties, is not prohibited, either expressly or by necessary implication, in that convention. It is, therefore, the opinion of this office that the issue of such a knife as is herein described would not be a violation of the Geneva Convention."

The general shape of the knife is similar to that of the Filipino working bolo. The blade is 12 inches long, its greatest width $2\frac{1}{2}$ inches. The blade is $\frac{3}{8}$ in. in thickness at the handle, gradually tapering to $\frac{1}{8}$ in. at the point. The edge is dull for $1\frac{1}{2}$ in. at



The Hospital Corps Knife.

the handle, from this point the edge is bevelled on one side to and around the point. Weight of knife, $1\frac{1}{2}$ lbs, with scabbard, 2 lbs.

"In reaching its decision as to the form of the knife, the Board considered the following uses to which it would probably be put: to prepare extemporized splints and to clear away brush and undergrowth for the passage of men and litters, to make extemporized litters, cut grass and brush for beds, to cut fire wood, to improvise tent pegs and poles, to drive tent pegs, to open packages, dig holes and trenches, dress fowl, cut meat and perhaps to butcher, and in emergency, to be used as a weapon of defense."

THE DRILL REGULATIONS.

The most important changes in the revision are in the reduction of the litter squad from four to two bearers, and in the

return to the system of attached litter slings, in which the sling is made a permanently fixed part of the litter instead of a part of the personal equipment of the men as at present. These changes have necessitated an entire re-writing of the regulations and in the opinion of the Board a great gain in simplicity, execution and explanation has been attained.

A large number of reports from medical officers were received and were given careful consideration. The result of this consideration, together with the experience of the members of the Board covering a period of nearly a year, have convinced



Litters in Line.

the Board of the practicability of the changes made. Over two-thirds of the medical officers heard from were in favor of the two-bearer squad and of the attached litter sling.

"The squad has been reduced from four to two bearers because it is believed (1) that more than two men will seldom be available for bearer and first aid work in modern warfare, and that, therefore, the Hospital Corps should be trained, primarily, in working with the unit to which war conditions will at once reduce it. (2) That as a matter of fact the actual bearer work is practically always done by two men, the additional two men of

the present squad being unemployed most of the time. Under the new system just double the number of litters is provided ; in going long distances the squad when necessary can rest, or if the patient is very heavy an additional squad can be assigned to the litter ; (3) that all movements of the drill system are practicable with two bearers, except the passage of a high obstacle, a maneuver which is seldom necessary. In ascending and descending stairs a third bearer is desirable, but whenever there are stairs to be surmounted he is usually available ; (4) that the target area offered is much reduced in size ; (5) that the present drill, which is complicated by having to assign and explain the positions for four men in each movement, is much simplified in the drill with two bearers."

"The litter sling should form part of the litter instead of part of the equipment of the soldier because: (1) the sling is never needed except when the litter is used; in the new system it forms part of the litter, from which it cannot be detached without violence. At present each Hospital Corps man carries a sling, whereas under service conditions the larger proportion of the men, such as those on duty in hospitals and supply depots, as ambulance drivers, &c., are seldom called upon to use the litter. Moreover, when worn as at present, the sling is in the way and liable to be lost when the soldier takes off his blouse or unbuckles his belt, as he often does on the march ; (2) the sling is always needed when the litter is employed, and is only wanted for use at those times. Litter bearing is frequently performed by men from all arms of the service in whose equipment no litter slings are provided."

In any severe engagement Hospital Corps men will be largely employed in first aid work, while the carrying and transporting of the wounded will be turned over to details from the line.

The arrangement of the subjects has been somewhat changed and a few new ones have been added.

The following paragraph has been inserted at the beginning of the drill: "Par.—The purpose of this drill is to teach the most useful methods of handling the sick and wounded, to secure the concerted action, and for the disciplining effect which

follows drill in prompt obedience to the word of command. When the men have thoroughly mastered it, litter squads should work independently as in actual service."

In general the revision may be said to have resulted in the following changes :

1. Making the regulations conform to the new Infantry Drill Regulations in "definitions," "general principles," and "school of the soldier."

2. Describing in detail the personal equipment of the Hospital Corps, including its packing and manner of carriage.



Detachment in Platoons of Litters.

3. Insertion of the "Manual of the Sabre for Officers."
4. Abolishing marchings and turnings by fours and substituting movements by twos.
5. Reducing the litter squad to two bearers.
6. In the manual of the litter the general rule is followed of making all executions take place at the second command, thus conforming to the manual of arms in the different branches of the line of the Army.
7. Making provision for marching in platoon formation, when necessary, both without and with the litter.

8. Simplification of the methods of loading and carrying the loaded litter and of loading the ambulance. It was aimed to make the commands for these movements suggest the execution.

9. Changing the form of inspection of the detachment. A simpler form has been provided and one appropriate for the single rank formation.

10. Improving the shelter tent drill.

11. Revising and considerably simplifying the methods of pitching hospital, wall, and conical wall tents.

12. Inserting numerous drawings to illustrate the movements described.

THE CHANGES IN DETAIL.

Definitions. Have been slightly modified to agree with the new Infantry Drill Regulations.

General Principles. These have been taken from the new Infantry Drill Regulations, and include all matter given under the heading "Commands," in the old Hospital Corps Drill Regulations.

Signals are unchanged.

The School of the Soldier has been taken from the new Infantry Drill Regulations, and includes "The Position of the Soldier," the "Rests," "Facings," "Salute," "Setting-up Exercises," "Steps" and "Marchings."

Equipment of the Hospital Corps Soldier. New matter has been inserted under this heading, as follows :

Description of the Hospital Corps personal equipment.

The clothing roll ; its contents and method of packing.

The articles of horse equipment, and

The method of packing personal equipment on saddle.

The Manual of the Saber for Officers, taken from Cavalry Drill Regulations has been added.

The School of the Detachment. This is based upon the new Infantry Drill Regulations and some important changes have been made. The "marchings" and "turnings" by fours have been omitted and movements by twos have been substituted therefor, a simplification with results as nearly as great as that obtained by reducing the litter squad to two bearers.

Our detachments are usually small and readily admit of marching in column of twos. For detachments having more than twenty privates the division into platoons is permitted and movements by platoons have been added to the regulations. Large detachments of the Hospital Corps are at times required to march in platoon formation in parades, reviews, &c.

Litter Drill. Each set of twos is a litter squad. When acting independently the squad is under No. 2's command.

Manual of the Litter. Throughout this drill no execution occurs at the preparatory command as has heretofore been the



Loading the Litter, First Method.

case. The preparatory command is considered one of preparation only and the execution occurs at the second command, or command of execution. Otherwise the movements remain about the same. "Stack litters" and "Secure slings" have been added, and "Order litter" has been omitted.

Marchings with the Litter. Provision is made to take an interval of four paces between litters in line, and one pace in column. The detachment may be divided into platoons of four litters each and may then be marched by the commands applicable to platoons without litters.

The Loaded Litter. With two bearers the patient must be carried to the litter. This may be done in either of two ways,—by both bearers on one side of the patient, the command being—“1. Right (Left) Side, 2. Posts,” or by one bearer at either hip of the patient, the command being—“1. Hips, 2. Posts.” If a third bearer is available he may support the knees and legs of the patient, or he may get the litter and place it under the up-lifted patient.



Loading the Litter, Second Method.

To direct squads to work independently, the command—“Squad leaders take charge of squads,” has been substituted for that of “Search for wounded.”

A low obstacle is passed by halting and lowering the litter, and then giving the commands—“1. At sides of litter, 2. Posts,” and “1. Prepare to lift, 2. Lift.” The litter is then passed over, the front handles rest on the obstacle while the front bearer goes over the obstacle, and the rear handles rested in the same manner while the rear bearer goes over. The squad being at sides of litter, the litter is then lowered.

Bearer Work with Increased Numbers. “Par.—In excep-

tional cases, as in ascending and descending stairs, when the patient is very heavy, the ground difficult, or when an obstacle over three feet high has to be surmounted, it may be necessary to use additional bearers. When three bearers are available the third bearer gives aid where most needed; in loading and unloading he usually places the litter under the patient or removes it, or he may assist in supporting a fractured limb. In litter bearing he acts as

a relay or assists in supporting either end of the litter as directed."

To surmount a high obstacle the litter is lifted by four, raised and passed over; to carry it up and down stairs no separate commands are used other than those used to lift and march with four bearers.

Improvisation of Litters. But one method of preparing blanket litter is demonstrated. The rest of the section remains practically unchanged.

Methods of Removing the Wounded without Litters. For one bearer three methods are described—in arms, across back, and astride of back. For two bearers, besides those for carrying patient to the litter, the method of carrying by the extremities is the only one given, the commands being—"1. Head and feet, 2. Posts"; "1. Prepare to lift, 2. Lift."



Loading Ambulance.

To Place Patient on Horseback. This method has been considerably simplified and improved, in the opinion of the Board.

As the *travois* is part of the field equipment of the Medical Department, a description of it, the manner of assembling and taking apart, and its use has been inserted.

The Ambulance. The new pattern ambulance and its equipment are described. An ambulance orderly is provided, who

rides on the seat with the driver. In loading and unloading he opens and closes the tailgate, raises and lowers the curtain, etc.

The litter having been brought to the rear of the ambulance, is halted and lowered. *To load*, the commands are—"1. At sides of litter, 2. Posts. 1. Lower (Upper) berth, prepare to load, 2. Load." The litter is lifted and pushed into the ambulance by the bearers, who grasp their respective poles with both hands. If the upper berth is to be loaded, the litter is then lifted from the floor of the ambulance and the handles are slipped into the sockets and straps. *To unload*, these movements are reversed.

To Prepare and Load Ordinary Wagons to Transport Wounded. No change has been made here.

Inspection and Muster. Important changes have been made under this heading. Instead of the commands—"1. Open ranks, 2. March, 3. Front," there have been substituted—"1. Prepare for inspection, 2. March, 3. Front." The execution consists in the passing of the junior officers from the rear rank to the front of the line as heretofore, and the dressing of the rank.

Provision has been made for the inspection of clothing rolls.

The inspection of litters and ambulances has not been changed.

Tent Drill has been carefully revised and considerable simplification has resulted.

A Scheme for Pitching the Field Hospital has been inserted, with a diagram, and a description of a method of laying out the camp.

A new set of drawings illustrating the regulations has been prepared.

The regulations have been approved by the Surgeon General and the General Staff and their publication will probably immediately follow the final approval of the revised regulations for the Infantry.

Outlines of First Aid. Some minor changes have been made in the outlines, which it is believed will make them more complete. A description of the aid stations established by the Medical Department during an action is given.

TYPHOID FEVER IN THE TROPICS.

By THOMAS C. BIDDLE, M. D.

LATE CAPTAIN AND ASSISTANT SURGEON IN THE KANSAS
VOLUNTEER INFANTRY.

SURGEONS who may have been on duty at Camp Thomas during the summer of 1898, will recall the unusual manifestations of the typhoid fever epidemic at Chickamauga Park. Many of the cases there were atypical; they were nearly all complicated by the almost universal camp diarrhoea that prevailed. There was certainly a strong malarial influence operating that altered the characteristic history of many cases. The idea of malaria, however, so biased the judgment of the medical officers on duty, that they were slow in recognizing the real character of the epidemic. It was not until the disease had continued for several weeks, that it was generally accepted that nearly all the cases of continued fever at Chickamauga were typhoid, and not malaria.

My purpose in referring to the epidemic of typhoid fever at Camp Thomas, is to develop the thought that camp life, and its influences, even in our southern states, so change the clinical history of typhoid fever, that the diagnosis is often confusing to the inexperienced in such service.

This fact accepted, we may conclude that the influences of a tropical climate are much more potential in changing the usual course of the disease.

Of typhoid fever in the tropics, Dr. Manson writes, "The existence of typhoid fever in the tropics was for long not only ignored, but actually denied even by physicians and pathologists of repute".

"Formerly, the idea of malaria so dominated all views of tropical fevers, that nearly every case of pyrexia, other than associated with the exanthemata or with manifest inflammation was relegated to this cause. When ulceration of the ileum was encoun-

tered in the post mortem room, the intestinal lesion was regarded not as the specific lesion of the fever, but merely as a complication. More correct views prevail at the present day, and typhoid now ranks, not only as a common disease in the tropics, but, to the European there, as one of the most commonly fatal." To what extent the natives are subject to the disease is somewhat problematical. It seems to be true that they are not so commonly affected as are persons there from northern latitudes. 'Acclimatization or habituation appears to have an immunizing influence among the natives.

My personal experience with tropical typhoid fever was in the campaign in Porto Rico. The troops engaged in the expedition were nearly all taken from Chickamauga Park, leaving that camp about the time the typhoid epidemic had reached its most active period. Not sufficient care was exercised in inspecting the health of the commands before embarking. The troops were anxious for an opportunity to see active service, and many were sufficiently stimulated by the excitement of the movement to enable them to conceal the initial symptoms of the fevers that were already in operation. As a result of these conditions, many soldiers were sick with the disease when the troops were landed on the island. My assignment was with the Reserve Hospital, 1st Army Corps, which was the field hospital for Haines' brigade.

Upon landing at Arroyo, about 150 sick men were found scattered throughout the town, the brigade having landed a few days previously. The cases were nearly all fever cases, and presented the general characteristics of the Camp Thomas fever.

One new and peculiar symptom was observed. It was a peculiar subcutaneous extravasation of blood. These discolorations were observed more frequently upon the exposed surfaces of the body, the face, neck and extremities. This unusual manifestation was quite puzzling at first. We found the cause of it to be the bites of the vicious tropical mosquito, and the vitiated condition of the blood.

Within a few days after landing, our hospital was removed to Guayama, where we remained from August 12, to October 23, 1898. The sick reports increased rapidly. The camps appeared

to become completely infected with typhoid toxine; at times, 30 to 40 per cent of the troops were reported sick. The cases were nearly all types of continued fever.

The medical officers held different opinions as to the diagnosis. The popular belief that all fevers in the tropics were malarial, biased the judgment of the surgeons. Intelligent and educated native physicians were most positive in their statements that typhoid fever was unknown on the island, and that the cases were malarial. Instruments to inspect the blood for malarial plasmodium were not available, and had they been, it would probably have only added uncertainty and doubt, because malaria doubtless complicated many of the cases.

As time passed, the true character of the disease revealed itself more clearly; intestinal perforations, with resulting peritonitis and death occurred. Post mortems revealed intestinal ulceration in a most exaggerated form; the extent of the ulceration in some cases were astonishing.

Of the peculiarities of tropical typhoid, the one that impressed me most strikingly was the presence of hemorrhagic complications. Intestinal hemorrhages were frequent and alarmingly excessive, although if the hemorrhage was not fatal, the fever usually subsided and the cases progressed more favorably after the hemorrhage.

Epistaxis was often severe and difficult to control.

Purpura haemorrhagica appeared, as a complication, in several cases in which there was injection of the conjunctiva, bleeding from the gums and mucous surfaces. Subcutaneous discolorations were frequently present, reminding us of the unpleasant possibility of yellow fever. I recall one case that caused considerable alarm. The man was taken sick in the morning. He grew rapidly worse, and was brought to the hospital in the afternoon. He was comatose, temperature 106 degrees F. the body presenting various discolorations, like contusions. The case ended fatally early in the evening; the discoloration had appeared too early for yellow fever.

I conclude that these hemorrhagic symptoms are due to blood changes, and that they are the most distinctive characteristics of tropical typhoid. The temperature and pulse range was

not especially different from that observed in temperate latitudes.

One or two practical points of interest to the military surgeon, and I close:

I believe the most desirable place to treat tropical typhoid is in a well floored and drained tent.

At Guayama, our field hospital became so overcrowded that it was necessary to establish a hospital in town within buildings. I have not comparative statistics of the results of treatment in the two hospitals, but, I do know, that the ratio of fatalities was much higher in the buildings than in the tents.

Again, I believe fever patients should be allowed to remain where they are located until convalescence is established.

My observation leads me to the conclusion, that the practice of carrying typhoid patients home, during the course of the fever, in hospital ships, is not good practice. I saw more than one patient who was progressing favorably, and whom I expected to recover, transferred to ship and die en route home, or soon after reaching the States, death in these cases probably being the result of the movement.

THE MILITARY BREAD RATION IN DENMARK.

IN *Militærlægen* for January 1904, Dr. Ravn states that the Danish War Office has appointed a commission to investigate the question of the military bread ration and to make recommendations as to its improvement. It is quite probable, he remarks, that the outcome of the investigation will not be a recommendation to increase either the nitrogen or the fat, nor is there any reason to believe that a mixture of rye and wheat will be proposed since the latter is very expensive in Denmark and the men are accustomed to rye bread. There may, however, be a question of using yeast instead of leaven and an attempt will naturally be made to obtain rye of as good a quality as possible. An effort will also doubtless be made to increase the fineness of the flour as there is no doubt of the better quality of bread made from finely ground flour. The writer concludes with a remark that it is impossible to have any idea as to the stand the commission may take with regard to the question of bran.—HANS DAAE.

THE UNITED STATES ARMY GENERAL HOSPITAL
AT THE PRESIDIO, OF SAN FRANCISCO,
CALIFORNIA, 1901-1902.

By COLONEL ALFRED C. GIRARD,

ASSISTANT SURGEON GENERAL IN THE UNITED STATES ARMY.

Part 2.

2. MEDICAL WORK OF THE HOSPITAL.

THE medical work of the Hospital has been carried on by Medical Officers, each Officer, as a rule, having charge of two wards, each containing forty patients. Connected with the regular medical work there has been in operation an eye, ear, nose and throat clinic, X-Ray and photographic laboratory, and a pathological and bacteriological laboratory. The special reports of these departments which follow will explain the character and amount of work done in each.

The entire medical service of the Hospital has been under the supervision of a Medical Superintendent.

RULES AND REGULATIONS.

The following rules and regulations have been prepared for the guidance of the Medical Officers in caring for the sick of the Hospital.

CARE OF PATIENTS.

1. Medical Officers will not authorize patients in their wards to receive from visitors, or from any outside source, liquors, wines or eatables of any sort; and in order to prevent the introduction of such articles into the ward, the head nurse will request visitors to leave in her care their satchels, handbags or baskets. In case of refusal to comply with this request the matter will be reported to the Commanding Officer.

2. Hereafter, patients able to sit up out of bed, will wear dressing gowns and slippers at all musters and inspections, except the daily inspections of the Officer of the Day and the inspections of the Ward Surgeons.

Ward Surgeons will be held responsible for the condition of dressing gowns and slippers, making request for repairs or exchange when necessary to the Property Office.

3. At no time must any ward in this hospital be left without at least one nurse and one Hospital Corps man. Wardmasters and the Chief Nurse are charged with the execution of this order.

4. Private soldiers in all wards will not be given passes unless they perform their share of light fatigue duty, except by authority of the Commanding Officer.

5. Each Ward Surgeon will send in daily, with his Morning Report, a list of patients who are able to work around the hospital, classifying them as follows: Those able to do light duty, and those able to do very light duty.

Water and weeding details will be selected by the Ward Surgeon from these lists the evening before going on, and they will report to the Non-Commissioned Officer in charge of fatigue, the water detail at 7:30 a. m., with privilege of 24-hour pass,—the weeding detail at 9 a.m. to work until 11:30 a.m.

HYGIENE OF PATIENTS.

1. Ward Officers will direct attention to the personal cleanliness of their patients and will arrange that every convalescent shall bathe at least once a week.

2. Ward Officers will make a personal examination of each patient on admission and at least once a week, for body lice or other insects. In case any lice are found, it is not sufficient to give perfunctory orders to some nurse or hospital corps man to attend to the destruction of the insects, but the Medical Officer should satisfy himself by personal inspection that the treatment was successful.

The bed of a patient infected with lice with all its contents, must be taken to the laundry room under the ward,—the bed washed with bichloride solution,—mattress, pillows and blankets set aside until the steam disinfection apparatus is ready and then submitted to steam,—the linen put in bichloride solution and then hung up to dry.

The inspection will be made every Monday morning and report will be made in writing that the inspection was made and its result—the latter to enable the Commanding Officer to ascertain if his instructions have been complied with.

CARE OF PATIENTS' VALUABLES.

1. Medical Officers will not accept the personal custody of money from patients.

This instruction is given for the protection of medical officers against possible claims. Money deposited in the Hospital safe is entered on the official records and its return is also made a part of the official record, and in this manner only can an officer be protected against claims possibly trumped up hereafter.

Such claims affect not only the individual officer, but the service as well

TRANSFER OF PATIENTS.

1. Ward officers will transfer from time to time, without further instructions from this office, such of their patients as are on full diet, and are not

in need of special medical or surgical treatment, to the Auxiliary Hospital.

2. When men are transferred from one ward to another within three days of their arrival, the histories, if not completed by the transferring officer, will be written by the receiving officer.

3. Hereafter, in making transfers of patients from one ward to another, care must be taken to see that the *ward* to which the transfer is made appears on the slip. When the transfer is from a ward in this building to a ward in the Auxiliary Hospital, a hospital corps man must accompany the patient transferred and present the transfer slip to the Steward in charge, who will enter the number or letter of the ward to which the patient is to be assigned. The transfer card will then be taken back to the ward *from* which the transfer was made so that the proper notation may be made in the Ward Book, after which the card will be turned in *promptly* to the Officer of the Day. This is necessary in order that the Morning Report may be complete.

4. Ward Surgeons are directed to turn in charts and Disposition Slips promptly on same day patients are discharged from the Hospital.

5. When the status of a soldier changes from "Enlisted Man" to "Discharged Soldier" as is the case when a Volunteer Regiment is mustered out, the Officer of the Day's Office should be notified the same day the change in status takes place.

FURLOUGHES.

1. Applications for furloughs for enlisted men will not be presented by Ward Officers for action by the Commanding Officer in cases where the applicant is able to do duty in the tropics or in the United States, or where the disability is permanent or in cases where the soldier is unable to pay expenses while on furlough. In other cases, the Ward Officer will note on the blank provided the diagnosis and the time during which the applicant will probably be incapacitated for service of any kind.

2. When an enlisted man in hospital is granted a furlough, he will be reported by name on the Morning Report of the Ward he leaves on the day following his departure, and will be carried numerically in the proper space in all subsequent reports until he returns or is ordered dropped. He will be carried daily on the Ward Register, while on furlough as "On Furlough till" (enter date). His bed may be filled or not, as the needs of the hospital may require. When he returns from his furlough he will be taken up in proper space (returned from furlough). If the furlough is for a period exceeding ten days his clinical record will be sent to the Officer of the Day on his departure. Upon his return the Ward Officer will apply to the Executive Officer for his record.

GENERAL INSTRUCTIONS

1. Ward Officers and the Officer of the Day will, in their daily inspections, pay particular attention to the condition of the closets and sinks in the wards; any condition which suggests stoppage or faulty flushing of the soil pipes will be immediately reported to this Office.

2. Ward Officers and Wardmasters are directed to instruct personally each patient that no reading matter of any kind, newspapers or periodicals or food or fruit of any kind whatsoever, will be taken into water closets by patients or others.

3. In addition to a close supervision of water closets, Ward Officers will direct that no refuse or foreign matter of any kind that is likely to obstruct the pipe be put into the sink in the tea kitchens. Plates from the wards should be thoroughly scraped before being put into the sink, and the refuse placed in cans provided for the purpose.

4. The use of towels, pillow cases and other linen for cleaning purposes is strictly prohibited. Cleaning material will be obtained from the Property Officer.

5. Whenever towels, sheets or other linen become soiled by fecal or other matter known or suspected to be infectious, these articles will be soaked in 1 to 1000 bichloride solution and afterwards dried in the ward laundry before being sent to the wash.

6. The spit cups used in cases of tuberculosis should be kept half filled with a saturated solution of permanganate of potassium.

CLINICAL RESEARCH.

1. Ward Officers will exercise especial care that the form for clinical records be complete before sending it to the office for file. When a patient leaves the hospital, there should be a clear and concise history of the case, giving dates as nearly correct as can be obtained, such, for example, as the date of the arrival in the Philippine Islands, of any attack of illness after arrival, with its duration, the date of onset of the present attack, that of departure for the United States, etc.

2. After admission to this Hospital, notes will be entered on the sheet headed "Progress of the Case" at sufficiently short intervals of time, from a day to a week, according to the case, to give at any point in the course of the disease a comprehensive exposition of the condition present.

3. When a man is transferred from one ward to another, the Ward Officer making the transfer will make a note in the "Progress of the Case", "Transferred from Ward . . . to Ward . . ." and append his signature.

4. When a man ceases to be an inmate of the hospital the Ward Officer will see that the date and manner of disposition and the condition of the patient at this time are entered on the form for clinical history and that the form is signed; only the signature of the officer last in charge should be found on the sheet, that of others who may have attended the case appearing under a note of transfer. These entries on the "Progress of the Case" sheet will be made by the Ward Officer personally.

5. Hereafter, when a patient is transferred from one ward to another, it will be noted on the chart, on the next line beneath the diagnosis, whether or not the Diagnosis Card has been sent to the Record Office.

The attention of the Medical Officers of this Hospital is called to the

delay in preparing clinical histories of Cases which have come to autopsy, to be transmitted to the Surgeon General with the autopsy records.

7. Hereafter, such clinical histories will, be prepared and handed to the Executive Officer before the autopsy is performed.

8. The clinical diagnosis of the case, in full, will be sent to the morgue on the card which accompanies the body.

MISCELLANEOUS

In cases of suspected tuberculosis, in which, even after repeated examinations of sputa, no tubercle bacilli are demonstrated, the Ward Officer should recommend transfer to Fort Bayard, provided the physical signs are sufficient to warrant the diagnosis.

When a patient dies in this Hospital, the Ward Officer will personally, at the earliest possible moment, secure all his effects; he will make an inventory of them and will himself deliver them into the possession of the Commanding Officer, or such person designated to receive them.

The Officer of the Day will take the utmost precautions that cases of infectious diseases, especially small pox, be not admitted to the general wards. In case of small pox, the Post Surgeon of the Presidio should be notified, and the patient held in the room to be assigned for that purpose. Cases of measles, mumps, scarlet fever, diphtheria, will be sent, to the Isolation rooms in Ward "F", when completed, until then, to the "Barracks."

The total number of patients admitted to the Hospital during the year has been 4551, divided as follows:

Regulars	4508
Volunteers	15
Others	28

The final disposition of these patients, as well as those left upon sick report at the close of the fiscal year ending June 30, 1901, has been as follows:

DISPOSITION.	REGU- LARS.	VOLUN- TEERS.	DIS. SOLDIERS & CIVILIANS.	TOTAL.
Duty	2277	26		2303
Died	79	2	19	100
S. C. D.	403	2		405
Deserted	47	1		48
Expiration of Service	369			369
To other Hospitals	378			378
Discharged by Order	8			8
Insane	114	6	5	125
Mustered Out		50		50
Left Hospital			524	524
Otherwise	24		2	26
	3699	87	550	4336

There were 402 patients remaining on sick report on June 30, 1902.

The number of patients received from Transports during the year has been as follows:

TRANSPORT.	DATE OF ARRIVAL.	REGU- LARS.	VOLUN- TEERS.	TOTAL.
Meade	July 28, 1901	415		415
Sumner	Aug. 12, 1901	169	-	169
Sheridan	Aug. 18, 1901	35		35
Hancock	Aug. 28, 1901	33		33
Grant	Sept. 18, 1901	232		232
Thomas	Oct. 2, 1901	44		44
Kilpatrick	Oct. 12, 1901	29		29
Meade	Oct. 28, 1901	13		13
Hancock	Dec. 4, 1901	299	1	300
Sheridan	Dec. 7, 1901	16		16
Thomas	Dec. 18, 1901	130		130
Kilpatrick	Jan. 9, 1902	2		2
Warren	Jan. 10, 1902	5		5
Grant	Jan. 21, 1902	129		129
Meade	Feb. 17, 1902	134	2	136
Hancock	Feb. 26, 1902	118		118
Sheridan	Mar. 13, 1902	147		147
Egbert	Mar. 28, 1902	4		4
Kilpatrick	Mar. 31, 1902	91		91
Crook	Apr. 2, 1902	7		7
Thomas	Apr. 16, 1902	80		80
Grant	Apr. 27, 1902	68		68
Buford	May 23, 1902	12		12
Sherman	Jun. 22, 1902	181		181
		2393	3	2396

During the year there have been 100 deaths, divided as follows:

Regulars	79
Volunteers	2
Discharged Soldiers	12
Retired Soldiers	2
Civilians	1
Retired Officers	2
Officers	1
U.S. Transport Captains	1

During the year 147 patients were transferred to the U. S. General Hospital at Fort Bayard, N. M., for treatment for pulmonary tuberculosis. These patients were divided as follows:

Regulars	145,
Civilians	2.

81 patients have been transferred to the Army & Navy General Hospital at Hot Springs, Ark., divided as follows:

Regulars	81,
Volunteers	0.

NOSOLOGICAL INDEX OF DISEASES

TREATED AT THE U.S.A. GENERAL HOSPITAL, PRESIDIO, S.F., CAL.,
FROM JULY 1ST, 1899, TO JULY 1ST, 1902.

The following nosological index has been prepared from a similar index kept in the Record Office of the Hospital, and will be of use as showing the number and character of the cases treated in this Hospital. The index kept in the Record Office has proven of the utmost value in studying cases of disease, as by its use it is possible to pick out from over 18,000 histories those relating to a certain disease, thus making it possible to select, in a few moments, from among these cases any particular disease which it is desired to investigate. The index as kept in the Record Office gives the name of the disease, together with the Hospital number of each patient suffering from that disease. It is believed that the index given below is very nearly correct. There are some cases which have not been included because of their indefinite character, but under the headings as given in the index, every case which has been catalogued is included. The index is arranged according to the nomenclature of diseases as given in the Army Medical Manual:

I. INFECTIOUS DISEASES, GENERAL AND LOCAL.

DISEASES.	FROM JULY 1, 1901 TO JULY 1, 1902	FROM JULY 1, 1899 TO JULY 1, 1901	TOTAL, FROM JULY 1, 1899 TO JULY 1, 1902
Scarlet fever.....	1	2	3
Measles	251	216	467
Variola	4	26	30
Vaccinia	4	76	80
Varicella	0	1	1
Influenza	8	23	31
Malarial fever, Pernic- ious	0	3	3
Malarial cachexia	75	244	319
Fevers of undetermin- ed causation.....	8	0	8
Erysipelas	5	8	13
Septicemia	2	2	4
Rheumatic fever	0	24	24
Mumps	29	91	120
Diphtheria	0	20	20
Typhoid fever	33	207	240
Cerebro-spinal menin- gitis	3	2	5
Malarial fever, inter- mittent	76	643	719
Malarial fever, remit- tent or continued...	48	143	191
Tuberculosis of the Lungs	157	223	380
Tuberculosis of other Organs	8	7	15
Carcinoma	2	9	11
Sarcoma	3	1	4
Syphilis	57	117	174
Gonorrhea	98	141	239
Gonorrheal epididymi- tis & Orchitis.....	32	94	126
Chancroid & results..	31	251	282
Other diseases of this class	6	41	47
Total	941	2615	3556

II. DISEASES OF NUTRITION, GENERAL.

DISEASES	FROM JULY 1, 1901 TO JULY 1, 1902	FROM JULY 1, 1899 TO JULY 1, 1901	TOTAL, FROM JULY 1, 1899 TO JULY 1, 1902
Scurvy	2	0	2
Anemia	12	53	65
Leucocythemia	1	0	1
Glycosuria	0	1	1
Gout	1	0	1
Other diseases of this class	1	0	1
Total	17	54	71

III. STRUCTURAL AND FUNCTIONAL DISEASES.

a. Diseases of the Nervous System.

DISEASES	FROM JULY 1, 1901 TO JULY 1, 1902	FROM JULY 1, 1899 TO JULY 1, 1901	TOTAL, FROM JULY 1, 1899 TO JULY 1, 1902
Alcoholism, acute....	2	24	26
Alcoholism, chronic..	2	16	18
Delirium tremens....	0	5	5
Chorea	1	4	5
Epilepsy	16	36	52
Insanity	132	215	347
Locomotor ataxia....	2	2	4
Meningitis	2	5	7
Myelitis	3	5	8
Narcotic poisoning, Chron. or drug habit	7	0	7
Neuritis	13	18	31
Neuralgia	5	18	23
Neurasthenia.....	19	23	42
Nostalgia	0	3	3
Paralysis	19	56	75
Other diseases of this class	2	19	21
Total	225	449	674

b. Diseases of the Digestive System.

DISEASES	FROM JULY 1, 1901 TO JULY 1, 1902	FROM JULY 1, 1899 TO JULY 1, 1901	TOTAL, FROM JULY 1, 1899 TO JULY 1, 1902
Corrosive & Irritant Poisons, Effects of.	0	1	1
Diseases of the Teeth, Gums & Alveoli . . .	20	0	20
Diseases of the Mouth and Tongue	1	0	1
Tonsillitis	68	128	196
Pharyngitis	5	0	5
Peritonitis, acute . . .	0	4	4
Dyspepsia	10	34	44
Gastritis	63	252	315
Gastric, ulcer & hem- orrhage	1	0	1
Colic	0	4	4
Constipation	15	52	67
Tenia or other intesti- nal parasites	5	9	14
Diarrhea, acute	28	111	139
Diarrhea, chronic . . .	77	336	413
Enteritis	122	190	312
Appendicitis	23	61	84
Dysentery, acute	23	6	29
Dysentery, chronic . . .	558	1628	2186
Dysentery, Amebic . . .	279	0	279
Hemorrhage, intesti- nal	0	2	2
Fistula in ano	6	33	39
Hemorrhoids	27	128	155
Biliary colic and cal- culi	2	2	4
Jaundice, catarrhal . . .	4	11	15
Hepatitis	3	4	7
Hepatic cirrhosis	1	0	1
Other diseases of this class	163	68	231
Total	1504	3064	4568

c. Diseases of the Circulatory System.

DISEASES	FROM JULY 1, 1901 TO JULY 1, 1902	FROM JULY 1, 1899 TO JULY 1, 1901	TOTAL FROM JULY 1, 1899 TO JULY 1, 1902
Angina Pectoris	3	4	7
Cardiac irritability ..	10	11	21
Cardiac degeneration	2	0	2
Pericarditis	0	9	9
Endocarditis	8	16	24
Valvular diseases & re- sults	28	65	93
Thrombosis & Embol- ism	0	1	1
Aneurism	0	5	5
Varicose veins	7	20	27
Phlebitis	1	9	10
Other diseases of this class	23	13	36
Total	82	153	235

d. Diseases of the Respiratory Organs.

DISEASES.	FROM JULY 1, 1901 TO JULY 1, 1902.	FROM JULY 1, 1899 TO JULY 1, 1901.	TOTAL FROM JULY 1, 1899 TO JULY 1, 1902.
Larynx, Diseases of..	7	25	32
Coryza	12	26	38
Bronchitis, acute	43	159	202
Bronchitis, chronic ..	34	97	131
Bronchitis, capillary .	0	1	1
Emphysema	2	0	2
Asthma	16	35	51
Pulmonary hemorrhage	2	1	3
Pneumonia, catarrhal	23	15	38
Pneumonia, croupous	8	120	128
Pleurisy	22	78	100
Other diseases of this class	9	48	57
Total	178	605	783

e. Diseases of the Genito-Urinary System.

DISEASES.	FROM JULY 1, 1901 TO JULY 1, 1902.	FROM JULY 1, 1899 TO JULY 1, 1901.	TOTAL. FROM JULY 1, 1899 TO JULY 1, 1902
Pyelitis and Pyelonephritis	3	1	4
Nephritis, acute parenchymatous	11	30	41
Nephritis, chronic parenchymatous	25	30	55
Cystitis	9	26	35
Enuresis	3	1	4
Hematuria	0	2	2
Prostatitis	0	2	2
Prostatic hypertrophy	1	0	1
Urethral stricture	7	13	20
Paraphimosis	0	4	4
Phimosis	2	26	28
Varicocele	26	78	104
Hydrocele	4	9	13
Other diseases of this class	17	41	58
Total	108	263	371

f. Diseases of the Lymphatic System and Ductless Glands.

DISEASES	FROM JULY 1, 1901 TO JULY 1, 1902	FROM JULY 1, 1899, TO JULY 1, 1901	TOTAL. FROM JULY 1, 1899 TO JULY 1, 1902
Adenitis	28	16	44
Lymphangitis	2	3	5
Splenic hypertrophy	2	0	2
Other diseases of this class	1	3	4
Total	33	22	55

g. Diseases of the Muscles, Bones and Joints.

DISEASES	FROM JULY 1, 1901 TO JULY 1, 1902	FROM JULY 1, 1899 TO JULY 1, 1901	TOTAL. FROM JULY 1, 1899 TO JULY 1, 1902
Muscular Contraction	1	0	1
Muscular rheumatism and myalgia.....	30	145	175
Whitlow	1	2	3
Osteitis and results. . .	1	3	4
Periostitis.....	7	7	14
Arthritis	30	18	48
Arthritis, chronic rheu- matic.....	71	28	99
Rheu'm, gonorrheal....	14	0	14
Arthritis, tubercular..	8	0	8
Bunion.....	2	1	3
Synovitis.....	7	19	26
Other diseases of this class.....	43	50	93
Total	215	273	488

h. Diseases of the Integument and Subcutaneous
Connective Tissues.

DISEASES	FROM JULY 1, 1901 TO JULY 1, 1902	FROM JULY 1, 1899 TO JULY 1, 1901	TOTAL, FROM JULY 1, 1899 TO JULY 1, 1902
Corns and warts	0	5	5
Ingrowing nails	7	26	33
Abscess	22	67	89
Furuncle	2	21	23
Carbuncle	4	1	5
Ulcer	10	54	64
Dermatitis, from poi- sons	3	12	15
Erythema	2	0	2
Psoriasis	1	0	1
Herpes	4	6	10
Eczema and pemphi- gus	3	14	17
Impetigo and acne...	0	2	2
Scabies	2	2	4
Other diseases of this class	34	1	35
Total	94	211	305

i. Diseases of Organs of Special Sense.

1. Diseases of the Eye.

DISEASES	FROM JULY 1, 1901 TO JULY 1, 1902	FROM JULY 1, 1899 TO JULY 1, 1901	TOTAL FROM JULY 1, 1899 TO JULY 1, 1902
Lids, diseases of.....	3	5	8
Conjunctivitis, acute	9	24	33
Conjunctivitis, chron- ic	2	5	7
Corneitis	0	2	2
Sclerotitis	0	4	4
Choroid, diseases of	6	0	6
Iritis.....	3	12	15
Retinitis	4	9	13
Asthenopia	0	1	1
Cataract	3	4	7
Glaucoma	2	0	2
Other diseases of this class	45	9	54
Total	77	75	152

2. Diseases of the Ear.

DISEASES	FROM JULY 1, 1901 TO JULY 1, 1902	FROM JULY 1, 1899 TO JULY 1, 1902	TOTAL FROM JULY 1, 1899 TO JULY 1, 1902
Diseases of external ear.....	1	81	82
Diseases of the tym- panum	0	2	2
Diseases of the mid- dle and internal ear	66	103	169
Deafness.....	2	6	8
Total	69	192	262

3. Diseases of the Nose.

DISEASES	FROM JULY 1 1901 TO JULY 1, 1902	FROM JULY 1, 1899 TO JULY 1 1901	TOTAL FROM JULY 1, 1899 TO JULY 1 1902
Nasal catarrh, chronic	3	3	6
Rhinitis	0	7	7
Nasal polypus	2	0	2
Total	5	10	15

IV. ACCIDENTS AND INJURIES.

a. General Injuries.

DISEASES	FROM JULY 1, 1901 TO JULY 1, 1902	FROM JULY 1, 1899 TO JULY 1, 1901	TOTAL FROM JULY 1, 1899 TO JULY 1, 1902
Insolation	0	38	38
Burns and scalds	3	6	9
Exhaustion	0	19	19
Explosion	1	0	1
Total	4	63	67

b. Injuries to Special Parts.

DISEASES	FROM JULY 1, 1901 TO JULY 1, 1902	FROM JULY 1, 1899 TO JULY 1, 1901	TOTAL FROM JULY 1, 1899 TO JULY 1, 1902
Burns and scalds local	1	0	1
Contusions & sprains	11	63	74
Dislocations	2	0	2
Fractures, exclusive of gunshots	44	58	102
Hernia, inguinal	74	140	214
Hernia, others	6	25	31
Orchitis, from injury	2	12	14
Sprains, muscular ...	6	0	6
Wounds, contused....	3	15	18
" incised	13	19	32
" lacerated....	9	26	35
" punctured ...	4	3	7
" gunshot	51	510	561
Other local injuries .	5	8	13
Total	231	879	1110

V. UNCLASSIFIED.

DISEASES	FROM JULY 1, 1899 TO JULY 1, 1902	FROM JULY 1, 1899 TO JULY 1 1902	TOTAL FROM JULY 1, 1899 TO JULY 1, 1902
Malingering	1	0	1
Unknown	28	14	42
Total	29	14	43

Rate of Mortality. Since July 1st, 1901, there have been 81 deaths at this Hospital. The following table giving the cause of death and the number of cases illustrates the rate of mortality in diseases which have been treated at this Hospital:

	NO. CASES ADMITTED	TOTAL NO. DEATHS
Chronic Dysentery, including chronic specific dysentery and amebic dysentery	837	22
Broncho-Pneumonia	28	8
Pulmonary Tuberculosis	157	8
Lobar Pneumonia	8	6
Carcinoma of the various organs	6	4
Abscess of the liver	7	3
Chronic diarrhea	77	3
Chronic interstitial nephritis	25	3
Internal hemorrhage from injury	2	2
Appendicitis	23	2
Purpura hemorrhagica	2	2
Scarcoma	5	2
General peritonitis	2	2
Syphilis	57	2
Empyema	1	1
Miliary tuberculosis	1	1
Pyæmia	1	1
Fibroid Pnenmonia	1	1
Ulcerative endocarditis	1	1
Acute lymphatic leukemia	1	1
Cholecystitis	1	1
Gunshot wounds	51	1
Acute septicemia	4	1
Surgical shock	1	1
Thoracic aneurism	1	1
Ankylostomiasis	8	1

From a consideration of the above table it will be seen that chronic dysentery, (amebic, and the chronic specific form) have caused the greatest number of deaths, but the rate of mortality has been low when compared with the number of cases received. The high rate of mortality in broncho-pneumonia will be discussed under a consideration of the epidemic of measles which occurred at the Presidio. The small rate of mortality which will be noticed in pulmonary tuberculosis is due to the fact that most of the tubercular cases were transferred to Fort Bayard, N. M., only those which were in such a condition to forbid traveling being retained at this Hospital

Chronic Dysentery: There were 837 cases diagnosed as chronic dysentery admitted to the Hospital during the year, of which 279 were due to the ameba of dysentery, the remainder being divided between the ordinary catarrhal form of dysentery and the chronic specific form. Of the amebic cases, nine died; of the chronic specific form, twelve. One case died which showed the characteristic lesions of marked catarrhal dysentery. The small rate of mortality shown in the cases of dysentery admitted to the Hospital during this year is due to two factors: 1st, that the cases admitted were not in as advanced a stage of the disease as those admitted in previous years, as a rule; 2nd, that the experience in treatment of dysentery cases at this Hospital for three years has resulted in a better knowledge of the therapeutics of the disease, and consequently better success in its treatment. In the amebic cases the injection of a strong solution of quinine has been pursued as a routine measure. This treatment has proven most satisfactory, as shown both by the physical condition of the patient after commencement of the treatment and by examination of the stools in the laboratory. The ameba quickly disappeared from the feces, as did also blood and mucus. The patients, gained in flesh, and in the majority of cases rapidly convalesced. Some of these patients, however, after treatment has been discontinued, relapse, and it is again necessary to resume the treatment. Taken all in all, the treatment by quinine injections in amebic cases has proven the most satisfactory that has yet been tried at this Hospital. In the cases which were not amebic various therapeutic procedures have been tried, but in all these cases the element of diet seems to play a more important part in the recovery of the patients than anything else. No routine diet has been found to be satisfactory, each case having to be treated separately. A strict milk diet in some cases rapidly promotes convalescence in the patients, while in others it has been found necessary to give some solid food. A thorough study of the cases of dysentery, aside from those due to ameba, but proves the fact that each case must be judged separately and studied thoroughly. Routine treatment in these cases is unsatisfactory. Injections have been used somewhat extensively. Those containing nitrate of silver have, in a

few cases, proven very beneficial, but in most cases the severe pain caused by the use of this solution has precluded its employment.

Broncho-Pneumonia. 28 cases of broncho-pneumonia have occurred at this Hospital following measles, of which eighteen died. This excessive rate of mortality is due to the fact that these cases were all complicated by a streptococcus infection, and the patients actually died of a streptococcus septicemia. The following report of the epidemic of measles which occurred at the Presidio has been prepared by the medical officer having these cases in charge.

Measles appeared at the Presidio about the middle of December, 1901, the first case being admitted to this Hospital on the 17th of that month. During the rest of this month eight other cases were received. The epidemic spread with considerable rapidity, seventy cases being admitted in January, seventy-nine in February and 116 in March. During April there was a falling off to 82, and a further decrease in May to 24. By June 1st the epidemic was practically suppressed.

These cases were treated, previous to March 21st, in two large buildings which had served as barracks. Each of these buildings contained one large and two small squad rooms, accommodating thirty-five, twelve and eight beds respectively.

In time these rooms became very much overcrowded, owing to the rapid extension of the epidemic and to the adoption of the rule which required patients to remain under surveillance in hospital until thirty days after the onset of the disease. This rule it was found necessary to make because of the susceptibility of these patients to broncho-pneumonia, especially when subjected, as most of them would be, to the exposure incident to camp life in this climate.

The difficulty of treating the men was also increased by the fact that many of them were recruits who had not yet learned the essentials of personal cleanliness and care of the squad room.

The nursing of patients was acceptably performed by members of the Hospital Corps until February 13, 1902, when it became possible to give the care of the sick into the hands of trained female nurses. There was, thereafter, a marked improvement

noticeable in the care and management of the wards, comfort of the patients and discipline of the men. Under the charge of Hospital Corps men it seemed impossible to prevent these untrained patients from expectorating freely upon the floor, a practice which was followed by a surprisingly large number of lung and ear complications. To show the probability of infection from this source it is interesting to note that no case of broncho-pneumonia, and very few ear complications, arose in those wards which were disinfected and placed under the charge of female nurses.

On March 21st, 1902, the improvised Hospital at the barracks was abandoned, and wards in the General Hospital proper were turned over for the care of the measles patients. Their proximity to the general wards proved not to have been of any moment, as no case developed through conveyance of the contagion.

As shown below, there were eighteen deaths, all occurring among the twenty-eight patients who developed broncho-pneumonia. The fatal cases were characterized by great intensity of symptoms from the onset of the complication, showing a high degree of toxemia, four cases dying in five days, and nine in eight days or less.

In nearly all fatal cases there was more or less pleuritic effusion, which invariably became purulent.

Those cases which went on to recovery never showed very extensive involvement of the lungs, but convalescence was very protracted.

A further study of the twenty-eight cases of pneumonia shows the disease to have supervened as follows: three on the seventh day, five on the eighth, eight on the ninth, and five on the tenth. The earliest case supervened on about the 5th day of measles, and the latest on the 15th. In one case the temperature had been normal for nine days.

In the table which follows, eye complications are not included, for the reason that comparatively few patients considered their eye symptoms of sufficient importance to speak of them during their stay in the measles wards. Consequently the few cases which reported would be of no value in such a table.

Total number of measles treated	381
Total cases pneumonia	28, or 7.3%,
Total deaths	18,
Per cent. of measles cases	4.7,
Per cent of pneumonia cases	64.3,
Total cases suppurative middle ear	46, or 12%,
Total cases suppurative mastoiditis	7.

In the cases which were autopsied sections were taken of the organs, and examinations by the pathologist of these sections all showed enormous numbers of streptococci present in the tissues, especially in the sections of the lung and spleen. Specimens of the sputa stained showed a preponderance of streptococci, there being comparatively few pneumococci present. From the examination of the sections and the sputa the conclusion is unavoidable that these cases became infected with a streptococcus septicemia. Cultures from the sputa and from the diseased organs in a few cases showed a typical streptococcus, and as far as observations have gone this organism did not differ from the ordinary streptococcus pyogenes.

The portions of this report relative to "Abscess of the Liver" and on "Cases of Malignant Disease" have already appeared in the JOURNAL OF THE ASSOCIATION OF MILITARY SURGEONS, for March 1903 (Vol. xii, page 156) and January 1904 (Vol. xiv page 19).

INCREASE OF THE FRENCH MILITARY MEDICAL CORPS.

GENERAL Andr , Minister of War, has laid before the French Assembly a plan for the enlargement of the Medical Department of the Army. He proposes the following proportions of the various grades:

- 3 Medical Inspector Generals, with the rank of Lieutenant General.
- 11 Medical Inspectors, with the rank of Major General.
- 45 Principal Medical Officers of the first class, with the rank of Colonel.
- 60 Principal Medical Officers of the second class, with the rank of Lieutenant Colonel.
- 340 Medical Officers of the first-class, with the rank of Major.
- 510 Medical Officers of the second class, with the rank of Captain.
- 400 Assistant Medical Officers of the first class, with the rank of Lieutenant.
- 100 Assistant Medical Officers of the second class with the rank of Sub-Lieutenant.

THE MEDICAL DEPARTMENT OF THE JAPANESE ARMY.

COMPILED BY
THE SECOND DIVISION OF THE GENERAL STAFF,
UNITED STATES ARMY.

OFFICERS of the army medical service are recruited principally from students of the medical school or the University, who are required subsequently to undergo a course of instruction at the military medical school.

One-year volunteers, who are licensed to practice medicine or to dispense, and men between the ages of 20 and 30 who have matriculated at the military medical school, may be appointed surgeon probationers and promoted to 3rd class surgeons.

Medical officers are classed as non-combatants, but have a relative military rank, the highest grade being that of lieutenant-general. The hierarchy of the apothecaries extends only up to the relative rank of major.

The uniform is of dark blue cloth with green facings; the cap-bands are green, the braid stripes green, and the lace stripes silver.

In peace time the headquarters medical *personnel* of each division consists of 1 principal surgeon, 2 surgeons, and nine medical subordinates. At the headquarters of each division is a well equipped garrison hospital, and local hospital arrangements are made at out-stations, each hospital being provided with a suitable proportion of medical officers, apothecaries, and medical subordinates.

The Red Cross Society has a central association in Tokio, with a branch in every ken (prefecture). It is a very flourishing institution, its list of subscribers containing nearly 700,000 names.

There are hospitals in all the chief cities, that in Tokio being a specially fine one, and there is a large staff of trained nurses, male and female, who in time of peace are at the service of the general public.

The society possesses two large steamers, the "Mercy" (Hak-nai), and the "Saviour" (Kosai), specially constructed and equipped as floating hospitals, which did excellent work during the operations in China, 1900-1901. In these ships the wounded and the sick find all the comforts furnished by a first-class hospital on shore, and are under the charge of a large staff of highly-trained surgeons and nurses.

ORGANIZATION IN WAR.

In war time, to each mobilized division is attached a medical detachment, consisting of detachment staff, 2 sanitary (or bearer) companies, 6 field hospitals, with due proportion of riding and baggage horses.

In the Chinese campaign, 1900-01 the establishment was as follows:

Field Hospital:

- 1 Chief medical officer.
- 5 medical officers.
- 1 apothecary.
- 9 N.C. officers, medical corps.
- 40 privates, medical corps.
- 1 cutler.
- 5 privates (infantry soldiers).

Transport train:

- 1 senior driver.
- 1 N.C. officer driver.
- 40 men.

The composition of the Bearer Company at Peking was as follows:

- 9 medical officers.
- 1 apothecary officer.
- 1 pay officer.
- 14 N.C. officers.
- 1 pay N.C. officer.
- 26 trained men, hospital corps.

A company can nurse 100 sick, but a single company does not carry a complete set of stores, the organization for war being 2 companies, with a complete equipment for 200 sick.

Reserve Hospitals are established either in or out of military garrisons, for the reception of patients sent back from the field,

as well as for those from regiments of the reserve and from the garrison.

The establishment of a reserve hospital comprises:

- 1 surgeon-colonel, surgeon-lieutenant-colonel, or surgeon-major,
as chief.
- 2 or 3 medical officers.
- 1 to 4 pharmacutists (officer).
- 1 commissariat officer.
- 3 to 5 chief attendants.
- 1 to 6 pharmacutists (N.C. officers).
- 2 to 8 commissariat N.C. officers or men.
- 30 to 40 attendants.
- 1 to 2 mechanics.

(a). If a sufficient number of medical and pharmaceutical officers be not available, their places may be filled by temporary civil medical practitioners and pharmacutists.

(b). Deficiencies in attendants and pharmacutists are to be made up by the 1st or 2nd class reserve attendants (N.C. officer), or by temporary hired employes.

(c). The duties of all, excepting those of hospital chief, commissariat officer, and under officer, may be taken by members of benevolent societies.

(d). For every increase of 40 patients over 120, 1 medical officer, 1 chief attendant, and 10 to 13 attendants may be added.

(e). The chief of the hospital is subject to the commander of the territorial division.

Auxiliary Hospitals may be established when required.

Medical Service on Line of Communications.—The medical staff of the line of communications consists of:

- 1 surgeon-lieutenant-colonel or surgeon-major, as chief.
- 1 surgeon-captain or surgeon-lieutenant.
- 1 pharmacist (only where there is no reserve medical stores).
- 1 N.C. officer.

Reserve Medical Personnel.—To each Division is attached medical *personnel*, organized at the time of mobilization, its duty being to serve in the stationary field hospitals.

Reserve medical *personnel* is named after the division to which it belongs. The establishment is as follows:

- 1 surgeon-major as chief.
- 2 surgeon-captains.
- 4 surgeon-lieutenants, 1st or 2nd.
- 1 pharmacist (officer).
- 1 commissariat officer.
- 14 chief attendants (N.C. officers).
- 40 attendants (N.C. officers).
- 3 pharmacists (N.C. officers).
- 9 servants.

The medical officers are, as far as possible, to be taken from the active list, and in case of deficiency in that, from the first or second class reserves.

Stationary Field Hospitals.—A stationary field hospital is intended to receive patients from the field hospital, the place of which it takes, so that the latter can advance.

It is not to move with the fighting line like a field hospital, but is to receive patients at a fixed place, continuing its work until there is an opportunity of sending them back.

The chief of a stationary field hospital is a surgeon-major or a surgeon-captain, and the strength of the *personnel* varies according to requirements.

Reserve Medical Store.—On mobilization, one reserve medical store is allotted to each Division, and named after the Division to which it belongs. The following is the establishment:

- 1 chief store master (lieutenant of train).
- 2 train N.C. officers.
- 6 train privates (2 shoeing smiths).
- 1 pharmacist (officer).
- 2 pharmacists (N.C. officers).
- 2 mechanics.
- 1 clerk.
- 2 servants.

The reserve medical store is located in a place convenient for the despatch of supplies to hospitals, &c, as a rule at the most advanced stations, or where there is railway or water communication.

If one portion of the army becomes detached, a reserve medical store is attached to it.

Transport of Patients.—On mobilization, a staff to arrange for the transport of patients is organized in each Division. It is named after the Division to which it belongs, and comprises:

- 1 major or captain, as chief.
- 2 medical officers (surgeon-captains or surgeon-lieutenants).
- 1 chief attendant (N.C. officer).
- 2 attendants (N.C. officers).
- 1 clerk (N.C. officer).
- 3 orderlies.
- 3 servants.

As a rule, the transport staff is located at the most advanced station of the line of communications, or where there is either railway, ship, or other convenient means of transport, the existence of houses, etc. for the reception of patients being taken into consideration. On the advance of the fighting line the transport also advances.

Field Hospitals.—The function of the field hospital is to receive the wounded from the dressing stations, or directly from the fighting line, and to transport them to the rear, gradually relieving the dressing stations, so as to enable the bearer company commander to advance or retire without hindrance.

Field hospitals are called by the names of their Divisions, counting from No. 1 to No. 6 in each division. The *personnel* and equipment of each are so organized as to be divisible into two equal parts.

A field hospital should be as near as possible to the dressing station, easily seen, sheltered from the enemy's fire, and convenient for the transport of wounded.

Dressing Stations.—The dressing station is established near the fighting line, in such place as can be easily found by the soldiers, is out of the enemy's fire, convenient for the transport of the wounded, and when possible in the vicinity of good water, and in the hot weather in the shade.

Its function is to receive wounded men from the fighting line, and to permit of their being medically treated before transfer to the field hospital.

Hospital Ships and Transports.—These are used when suitable water communication is available.

Medical organization of the different Arms of the Service.—
The establishment of medical *personnel* with units is as follows:

Infantry Regiment:

- 2 surgeon-captains (one officer may be a surgeon-lieutenant-colonel or a surgeon-major).
- 4 surgeon-lieutenants.
- 3 chief attendants.
- 12 ordinary attendants.
- 48 reserve bearers (trained soldiers belonging to the regiment).

Cavalry Battalion:

- 1 surgeon-captain (or surgeon-major).
- 1 surgeon-lieutenant.
- 1 chief attendant.
- 1 ordinary attendant.

Battalion of Artillery:

- 1 surgeon-captain (or surgeon-major).
- 2 surgeon-lieutenants.
- 1 chief attendant.
- 2 ordinary attendants.

Battalion of Engineers:

- 1 surgeon-captain (or surgeon-major).
- 1 surgeon-lieutenant.
- 1 chief attendant.
- 2 ordinary attendants.

Battalion of Train:

- 1 surgeon-captain (or surgeon-major).
- 2 surgeon-lieutenants.
- 3 chief attendants.

War Establishment of a Mobilized Division.—The medical strength of the war establishment of a mobilized division is shown in the following table:

	NON-COMBATANTS.				ANIMALS.		
	Officers	N.C. O.	Pvts.	Total	Pack.	Riding	Total
Medical sanitary detachment.....	18	60	330	408	40	10	50
6 field hospitals.....	42	54	600	696	300	42	342

THE SPLINT STRETCHER.

BY CHARLES F. STOKES, M. D.

SURGEON IN THE UNITED STATES NAVY.



The Splint Stretcher.
Showing the features
of construction.

IN taking up the subject of the transport of disabled persons one is amazed at the enormous energy that has been expended in that direction, and is disappointed at the crudeness of the devices that have been evolved.

The surgical features of this very important step in military surgical treatment, and in civil emergency practice, appear to have been lost sight of. A proper consideration of the cardinal surgical indications from the time the patient is injured in the field or in the street, up to the point where he is lodged in a hospital ward, appears to have been neglected.

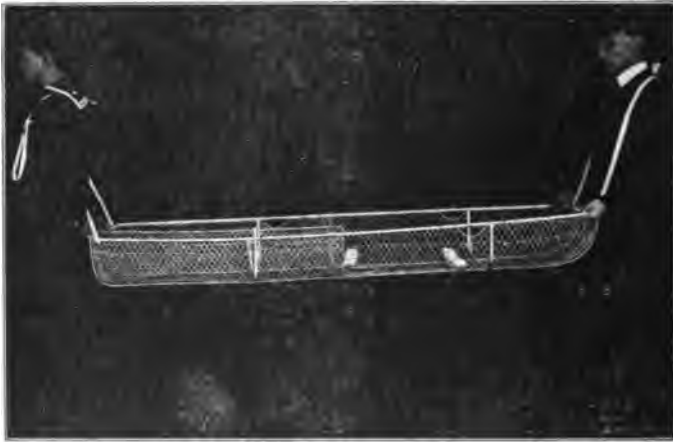
The questions of asepsis and operative interference are not under consideration, and will not therefore be discussed.

What are some of the indications to be met in the transport of wounded or otherwise disabled persons?

1. Comfort and a sense of security.
2. The splinting of the entire body as well as the immobilizing of the injured parts.
3. Transport, with a minimum of direct handling of the head, trunk and extremities, —in other words, the handling of the apparatus and not the direct handling of the patient.

To those unfamiliar with gunshot wounds, shell wounds and the severe injuries sustained in street accidents, the consideration

of the comfort of the disabled and their sense of security may at first thought appear of minor importance. At times, to approach a badly wounded man is to fill him with dread. A glance at the facies of a severely wounded soldier with, say, a compound fracture of the femur, as he is about to be lifted into an ambulance for transport to the rear, or a glance at that of a bluejacket, with the same sort of injury, as he is about to be put over a ship's side for transfer to a hospital ship or shore station, or, again, at that of a laborer, injured high up in an unfinished building, who is about to be removed to the street below by way of perpendicular



The Splint Stretcher in Use as a Litter.

ladders, will impress one not only with the great importance of inspiring confidence under these hazardous conditions, but also of accomplishing the removal in safety. The look of horror, dread and apprehensive helplessness seen in faces under these conditions cannot be disregarded.

Splinting of the body in the transport of the wounded is an indication that appears to have been overlooked, and is one of vital importance. To be sure some types of litters have restraining and securing attachments but none with which the writer is familiar claims to splint the entire body.

Transferring boards have been in use for some time but as far as the writer knows splinting qualities have not been claimed for them, otherwise they would merit condemnation as surgical barbarisms. The buttock pieces are so placed that they throw the upper fragments forward in fractures of the femur, and the foot pieces tend to put the broken bones out of line or crowd their ends together in fractures of the leg. The fact that these devices are constructed of wood and are therefore a source of great danger through splintering is enough to ensure their disappearance from fighting ships.

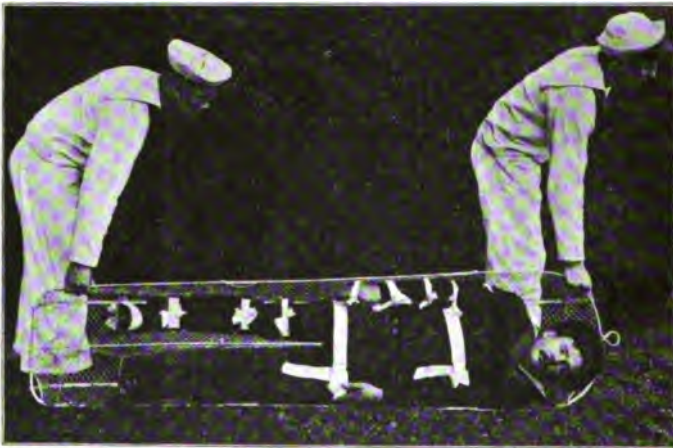


Splint Stretcher bearing a Patient of 200 pounds Weight.

Why is it necessary to splint the entire body? will be asked. Let us see. Is it possible to handle satisfactorily and efficiently severe crushing injuries of the leg, or very oblique fractures of the tibia, or the same types of injuries of the thigh, with the ordinary emergency dressings in place? In the writer's opinion it is not possible. We may put the injured leg up in padded side splints, or in a splinted pillow, but by the time the patient is lifted on to a stretcher the ends of the broken bones have been pretty well rubbed together, or worse damage may have been done. An

injured person who has been placed on the flat surface of an ordinary litter is pretty free to wobble about in transit, and the voluntary and involuntary muscular contractions of his attempts to establish his equilibrium add to the picture of his discomfort and danger.

In the splint stretcher about to be described not only is the entire body protected on three sides but the thorax and pelvis are secured, and the hip, knee, ankle and foot of one or both sides can be immobilized in a few seconds. In this apparatus the patient is impressed with his security and protection, which inspires



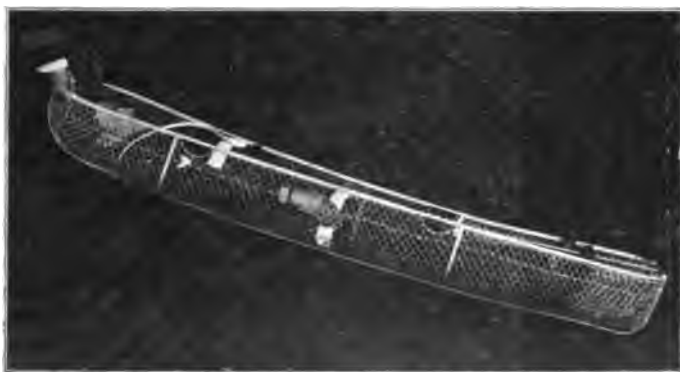
Patient carried on Side as in passing through Narrow Doorways.

him with confidence and adds to his comfort during removal. The splint stretcher, and not the patient, is gripped in the manipulations incident to transport.

As a teacher of military surgery, the writer has given the treatment of gunshot wounds much thought and study, and he has been impressed with the inefficiency of the present methods of treating injuries of the lower extremities incident to war and to the emergencies of civil life, from the time of their infliction up to the point where the patients are placed in hospital wards. Surgeon General Stevenson, professor of military surgery

in the Royal Army Medical School, recommends a type of fracture box for the early immobilization and treatment of gunshot injuries of the ankle-joint and leg in hospitals, and the same type of apparatus is employed in civil hospitals in the early treatment of complicated, simple and compound fractures of that region. Surgeon General Stevenson advises the use of posterior wire gauze splints in the early hospital treatment of certain types of knee-joint and thigh wounds.

In the two leg gutters of the splint stretcher, we have two wire gauze splints, and with the adjustable footpiece two complete fracture boxes as well. Thus in the field, or in the street,



Splint Stretcher in Use as a Sled.

at a first dressing, the indications so carefully looked after in hospitals, afterward, can be efficiently met. With the foot secured to the footpiece inward and outward rotation can be prevented in handling patients with fractures of the femur.

There are no injuries more difficult to handle at the front than compound fractures of the thigh and with that fact before him the writer planned the splint stretcher.

The mesh of the apparatus is sufficiently pliable to be shaped to the part it contains and is rigid enough for effective splinting. The foot-piece consists of a shoe shaped piece of galvanized steel somewhat wider than the foot with a linear slot on each side for

the passage of the securing bandage. It is secured to the mesh at any point by means of four rigid snap catches, and it can be raised and lowered in the leg gutters at will. When not in use it can be turned flush with the sides of the leg gutters, and snapped into the mesh in that position. It is considered a very important part of the apparatus.

The illustrations show the other characteristics of the splint stretcher so clearly that but a few more words of description will suffice.



Splint Stretcher.
Being slid down a
Ladder.

The device weighs about twenty pounds, is eighty inches long, twenty inches wide at the shoulder, and is eight inches deep throughout. The frame, which is constructed of half inch galvanized steel, consists of a horizontal piece to which alone the wire mesh is attached and which is doubled at the hand openings to give a satisfactory grip. The hand openings at the ends will in future have grips one and a half inches in diameter, and the loops at the head formerly used for attaching a tackle hook in up-ending a patient will be replaced by a small opening in the mesh and a slight undulation in the frame which will serve the same purpose. There are two cross braces and two longitudinal braces which give rigidity to the horizontal piece. The latter, also serve as runners when the splint stretcher is used as a sled. The mesh, which is clear of these braces, is thrown up in a fold between the legs. The openings in the

mesh are so wide that a bandage can be passed through it at any point, so that after the mesh has been shaped to a part it can be fixed there, or an extremity can be secured to it as shown in the illustrations. Two wide bands of canvas, one at the height of the axillae, the other at the point of the hip (shown too low in the photographs) secure the thorax and pelvis respectively. A sanitary opening completes the apparatus.

The splint stretcher has been given a thorough trial on board ship and meets the requirements satisfactorily. It can be used as a stretcher, as a sled, and can be slid down ladders from one deck to another with little or no discomfort to the patient. Supported on a tackle hook it can be up-ended with ease and in that position a patient can be safely put over the side, or be sent below through hatches. When the splint stretcher is in a perpendicular position the patient keeps his perineum away from the perineal fold by putting his weight on the foot-piece on the uninjured side. In case both legs are injured a bandage passed behind the neck over the shoulders and under the arms, and secured to the mesh clears the perineum. To pad the perineal fold would be to encourage its use as a saddle when the fragments of broken bones might be crowded together in cases of fracture.

The splint stretcher was originally devised to meet the requirements of the naval service but in the opinion of the writer it has a wider field. It is adapted to civil hospital ambulance practice, and in cities in which persons injured in the streets are carried to hospitals in police patrol wagons unattended by surgeons, it would minimize the mishaps due to unskilled handling. In removing patients from tenement houses, from the holds of ships, and through narrow passageways, no difficulties would be encountered, for the patient can be up-ended, or carried on side, in comfort and security.

The problem of adapting the splint stretcher to ambulances and hospital trains has been worked out. A set of three splint stretchers placed one above another can be supported by four leather straps. The leather straps are provided with adjustable snaps to support the splint stretchers and are secured to



The Splint Stretcher.
Showing the method
of splinting a Patient.

the roofs of the cars by spiral springs above and ring bolts below, and will in this way be made to ride easily. The splint stretchers are made so that they can be nested for economy of space in stowing, and they will stand a good deal of rough handling in shipment. They are strong enough to be used for purposes of restraint in treating delirious and maniacal patients. A sample splint stretcher forms part of the exhibit of the Kny-Scheerer Company of New York, at the St. Louis Exposition where it can be seen.

The apparatus has been adopted for use in the United States Navy; the Army will use it in the Transport Service, and will give it a trial in the field in the maneuvers at Manassas in September; it will be used in the hospitals of the Isthmian Canal Commission and several railroad surgeons have taken it up for use in their service.

The writer has aimed at simplicity in constructing this device and has sought to have it a stretcher and a splint in one, thus making the preparation of the patient for transport a procedure of one step instead of two. In this apparatus patients can be treated until they have recovered from shock, or until their injured parts are ready for a permanent dressing.

CASE OF PERNICIOUS MALARIAL FEVER, COMATOSE TYPE. RECOVERY.

BY CAPTAIN FREDERICK HADRA,

LATE ASSISTANT SURGEON OF UNITED STATES VOLUNTEERS
AND CONTRACT SURGEON, UNITED STATES ARMY.

THE clinical history of a case of Pernicious Malarial Fever admitted to the Field Hospital at Bangued Abra, Luzon, P. I. in 1900 is of interest chiefly on account of the large amount of quinine sulphate tolerated by the patient, without evincing the slightest degree of cinchonism and his subsequent freedom from malaria, though continuing on duty for many months at the same station.

The history, somewhat abbreviated from my daily notes, with a thermograph, is as follows:

John R. C.—Q. M. Sgt. Co. "D" 33rd Infantry. Native Arkansas. Age 28 $\frac{1}{2}$.

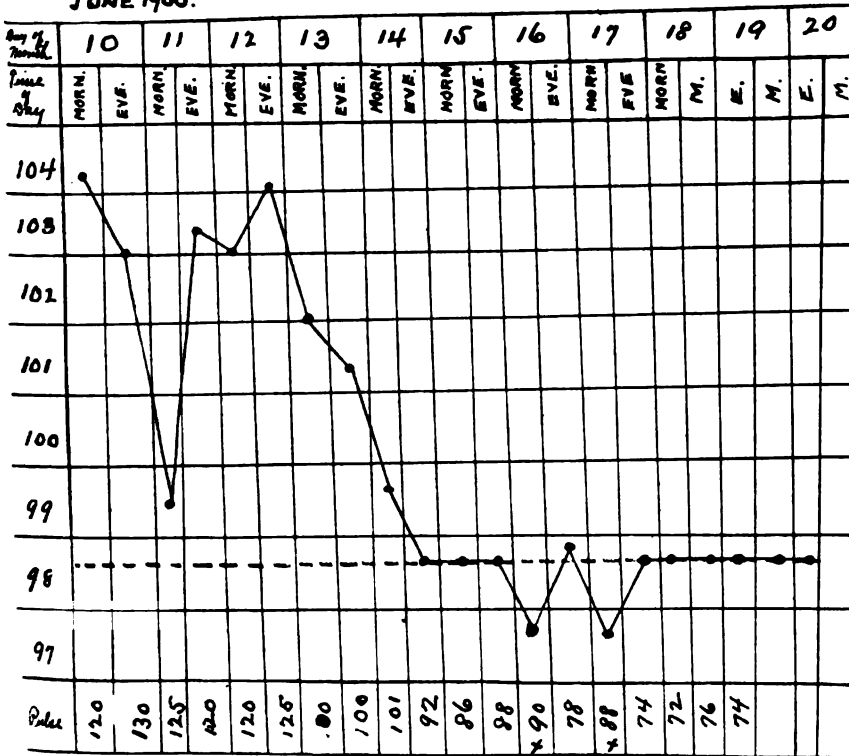
Admitted July 10, 1900, 10 A. M.

Diagnosis, Pernicious Malarial Fever, etc.

Family History—Good.

Previous History—Excellent. Had been ill with slight attacks of "chills and fever" for about 4 days previous to present

JUNE 1900.



Temperature Chart. Case of Pernicious Malarial Fever. Comatose Type.

attack, continuing on duty. Arose about 6 A.M. June 10th and performed his duties as usual, when about 10 A.M., he suddenly dropped unconscious.

Present Condition—Complete unconsciousness. Temperature, axilla, 104.2. Pulse 120. Respiration, stertorous.

Examination of Urine—Negative.

Bacteriological and Microscopical examination had to be omitted because theoretically my Hospital of 30 beds in a garrison of 500 was a Field Hospital and hence not entitled to these diagnostic aids.

Clinical Peculiarities:

1st day—Complete unconsciousness.

2nd day—Comatose; pulse rapid and thready; respiration stertorous.

3rd day—Comatose; pulse and respiration similar to above.

4th day—Consciousness regained; pulse, temperature and respiration improved.

5th day—Temperature normal—convalescence rapid.

11th day—Returned to duty.

Treatment.—Solution of Quinine Sulphate, by mouth, 20 grains (1.30 gm.) every 6 hours, for 48 hours, then 10 grains (0.648 gm.) every 6 hours for the next 48 hours; or a total of 240 grains (15.4 gm.) in 4 days. Calomel 10 grains (0.648 gm.) in one powder, and Strychnine Sulphate gr $\frac{1}{80}$ (0.002 gm.) every 4 hours hypodermically, were also given.

The entire absence of cinchonism, the rapid convalescence and the freedom from subsequent attacks are noteworthy. I doubt whether the patient could have been saved by hypodermic injections of quinine; because I lost a similar case in Cuba the year before using this method. I will also add that 15 grains (1.00 gm.) of quinine are usually sufficient to cure all intermittent tertian forms and that I do not remember ever having given more than 30 grains of quinine, per diem, before for ordinary remittent types. It is evident however that desperate cases demand heroic dosage.

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**BRIGADIER GENERAL WILLIAM ALEXANDER HAMMOND.
SURGEON GENERAL, U. S. ARMY, 1862-1864.**

Editorial Department.

The Surgeon Generals of the United States Army

XI. BRIGADIER GENERAL WILLIAM ALEXANDER HAMMOND, SURGEON GENERAL OF THE UNITED STATES ARMY, 1862-1864.

PROBABLY a greater emergency has never confronted medico-military science than that of 1862. The development of the greatest conflict of the ages had brought forth for solution numerous problems of a magnitude and importance beyond the dreams of previous experience. For months, at the most trying period of the struggle the medical department had been without the services of a lawfully constituted head. At this juncture the Sanitary Commission, organized by civilians for the assistance of the army medical department, took a hand in affairs and after careful consideration of the claims of all the medical officers then in the service, determined to recommend for appointment as Surgeon General, Lieutenant William Alexander Hammond. Although so low in rank at the time of his appointment, Dr. Hammond was by no means young in service or without ample military experience for besides the one year of service under his then commission, he had previously had eleven years of varied duty under a previous commission, which he had resigned only two years before.

General Hammond was the son of Dr. John W. Hammond of Anne Arundel County, Maryland, and was born at Annapolis, August 28, 1828. When he was about four years old his father moved to Pennsylvania, and he received his early education at Harrisburg. He began the study of medicine at sixteen, and attended lectures at the Medical Department of the University of the City of New York from which he was graduated with the degree of M.D. in 1848. After supplementing his college course

by a year's work at the Pennsylvania Hospital, he appeared before the army medical examining board, and was successful in obtaining an appointment as assistant surgeon, June 29, 1849. A few days later he proceeded across the plains with a body of troops to New Mexico, where he remained for nearly three years, serving during that period at nine different posts and passing a large portion of the time in active field operations against the Indians. After a much needed sick-leave spent in Europe, where he did not fail to avail himself of the opportunities also afforded for professional study and observation, he took station at West Point, and later at Fort Meade, Florida and Fort Riley, Kansas. While on duty at Fort Riley he served as medical director of an important expedition against the Sioux and as medical officer of the forces which located the road from Fort Riley to Bridger's Pass in the Rocky Mountains. He then returned eastward to Fort Mackinac, Michigan.

During this period of service he devoted his leisure hours particularly to physiology and physiological chemistry, and in 1857 was awarded the American Medical Association Prize for an exhaustive essay on "The Nutritive Value and Physiological Effects of Albumen, Starch and Gum when singly and exclusively used as Foods." He produced numerous other papers along these lines, some of which were very extensively circulated and translated into the French and German. The reputation thus gained secured for him an invitation to the chair of Anatomy and Physiology in the University of Maryland and on October 31, 1860, he resigned in order to accept that position.

Here marked success greeted his efforts; a most facile and forcible speaker, his mastery of his subject rendered his lectures popular and profitable in the extreme, while his exceptional professional qualifications soon secured for him an enviable position in Baltimore medical circles.

When the War of the Rebellion became a fact, however, he found his surroundings less congenial owing to the pronounced secession sympathies of the locality. He then determined to stand loyal to his convictions, withdraw from the field in which he has been so successful and re-enter the military service. To do this he had to begin at the beginning and receive no credit for

his eleven years previous service. Undaunted by this however he appeared before the examining board, and, passing at the head of the class, was first assigned to duty with General Patterson and charged with the organization of general hospitals at Hagerstown, Frederick and Baltimore. He was then ordered to report to General Rosecrans at Wheeling where he was detailed as Medical Inspector of Camps and Hospitals. His efficient discharge of these duties attracted the attention of the Sanitary Commission, which was dissatisfied with the administration of the medical department of the army and which in the autumn of 1861, urged the removal of the existing head of the bureau and the appointment of Dr. Hammond as his successor, being assisted by petitions from a large portion of the scientific bodies throughout the country, but without success. A few months later, however, the collision between the Secretary of War and the Surgeon General rendered a change possible, and the appointment of General Hammond was secured, although he was opposed by the Acting Surgeon General, Surgeon Robert C. Wood, and by Secretary Stanton, who had a candidate of his own in the person of a Dr. Chaffee of California.

Surgeon Wood having for a second time failed to be appointed Surgeon General, set to work again to secure the Assistant Surgeon Generalcy. He was well acquainted with President Lincoln, having attended professionally in his family, and, soon after Hammond's appointment, went to the White House and asked for the appointment. The President replied that he would not interfere in the matter, and that Wood must apply to Secretary Stanton. Wood then went to Stanton only to be told that he must apply to Hammond as he, Stanton, had determined to appoint for that office the man whom the Surgeon General should designate. Wood then came to Hammond and said :

"General, I have been trying for the appointment of Assistant Surgeon General ; the President referred me to the Secretary of War, and the Secretary to you, saying that the appointment would go to the one you selected. Now I believe, that, considering my rank and the services I have done, I am entitled to the promotion. To be sure I was your rival, but never in a factious or dishonorable manner, and I am ready to give you a cordial and loyal support in your administration."

All this appealed to Hammond's feelings, and he replied "Dr. Wood, I will at once see the Secretary, and if the appointment depends on me, you shall have it."

He went to the Secretary and asked the appointment. The Secretary said, "But Mr. Surgeon General, have you fully considered what you are doing? Do you believe that, under all the circumstances Dr. Wood can give you hearty support?" Hammond said he thought he could. The Secretary said "I did not before think you a weak man, but Wood shall be appointed."

Later events showed that the Secretary was correct, and the General found it necessary to have another officer in the position. General (then Major) Joseph R. Smith was in charge of the Seminary Hospital in Georgetown when not very long after, General Hammond drove up to the hospital, entered, seated himself in the office and said :

"Smith, I am going to part with Wood, to send him west, and I am looking for some one to take his place in the office. I am so pleased with your management of your hospitals that I have come to ask you if you are willing to take Wood's place when he leaves. Wood has been so long practically in charge of the office, that it is hard for him to be a subordinate, or realize that I am Surgeon General. Your duties will be to manage the office proper, and thus give me leisure to perfect my plans for certain great reforms and improvements which I have under consideration ; also to perform such other duties as I may assign to you as my principal assistant. During my temporary absences the President will appoint you Acting Surgeon General, to perform my duties."

After a minute's consideration Dr. Smith replied, that if he thought him competent, he was willing. Hammond then said, "Well, that is settled," and after a few minutes spent in farther outlining the duties of the office, he left. Shortly afterwards, in July 1862, Dr. Smith's orders for duty in the office were issued. He promptly reported, and an intimacy and friendship then began between them which, without a disagreement or discord, continued till the day of Hammond's death. This lifelong friendship renders it possible for General Smith to speak most in-

timately of his colleague and to him this sketch owes much of its most valuable features.

Of the work of the new Surgeon General no better picture can be given than in the glowing words of Stillé in his *History of the United States Sanitary Commission*: "A new and vastly enlarged supply table, or list of articles which the Government would undertake to provide for the inmates of the hospitals, was also issued by order of the Surgeon-General, embracing many things essential to their comfort, for the supply of which the hospital fund had been hitherto the only and most precarious resource. Hospital clothing was also furnished to the patients under the new regime, a provision which, when their condition in respect to personal cleanliness upon their entrance to the hospital is considered, seems an indispensable prerequisite to their proper treatment. But the measures of reform introduced by the Surgeon General did not cease with his efforts to provide for the material comforts of the patients. The condition of the medical staff excited his most serious attention, and his struggles to maintain a high standard of professional excellence in it were never relaxed for a moment. To effect this important object he devised most generous and liberal plans, some of which were adopted, and others failed from a want of co-operation by the War Department. They were all characterized by that comprehensiveness of view which proved his thorough appreciation of the duties of his great office. As a means of securing the most competent men for the medical service of the army, he reorganized the boards of examination, and insisted upon a higher standard of attainment on the part of the candidate. He established also a new and complete system of hospital reports, which was designed to embody not merely a formal and barren statement of the number of patients in the hospitals, and of those who were discharged or died, but also such facts concerning their condition as would constitute valuable material for a medical and surgical history of the war. The interest and importance of such a history, not merely as a record of what had been done here, but as a valuable contribution to our knowledge of the general laws which govern the health and efficiency of armies, are too obvious

to need comment. In order further to accomplish this object, he instituted at Washington, an Army Medical Museum, in which was collected and arranged a vast number of specimens from the different hospitals, illustrating the nature of the peculiar diseases to which soldiers are liable, and the character of the wounds which are inflicted by the new missiles of war. The peculiarity of these wounds has essentially modified one of the most important departments of military surgery, and the specimens thus brought together in the Army Medical Museum, far exceeding in number and variety those of any other collection in the world, have served not only to advance the cause of science and humanity, but have rendered the Museum a just object of national pride. But the great central want of the system, which, left unsupplied, all the other improvements suggested by the Surgeon General would have proved of little value, was the want of proper hospital buildings. Fortunately for the completion of the circle of his plans, the necessary co-operation of those officers of the Government outside of the Medical Department, who were charged with the erection of hospitals, was at last obtained, and a large number were constructed on a vast scale in different parts of the country according to the pavilion system. The peculiar advantages of this system, and the wonderful results which followed its adoption in the improvement of the sick and wounded of the army, are a subject properly belonging to the medical history of the war. The best evidence we can give of the success of the experiment is to repeat the statement of the simple fact that the rate of mortality among the inmates of these hospitals was far lower than has been recorded of the military hospitals of any age or country."

The leisure afforded by transferring office details to Major Smith was well utilized by him in the work so brilliantly pictured by Dr. Stillé. While really of much less importance and infinitely less far-reaching in its effect, perhaps the most sensational act of his administration was his "Calomel Order," issued on May 4th, 1863. This order followed the receipt of a report from Medical Inspector Vollum who had been sent to inspect the sanitary condition of Grant's army on the Mississippi. Vollum comment-

ed on the prevalence of mercurial salivation in the army, and cited the instance of a Hospital steamer on the river, in which nearly every case was salivated. The few who were not salivated owed their escape to the fact that they had been too short a time under treatment to come under the mercurial influence.

Without quoting it in extenso, the order stated substantially that the reports of Medical Inspectors, and sanitary reports showed that the use "of calomel had been pushed to excess by military surgeons," causing "innumerable cases of profuse salivation" and "the not infrequent occurrence of mercurial gangrene." No doubt could exist that more harm had resulted from the misuse of both these agents (calomel and tartar emetic) in the treatment of disease, than benefit from their proper administration, and General Hammond therefore struck them from the Supply Table. Complaints as to this order were sent to the Secretary of War from numerous sources. He however called them "doctors quarrels," and not considering the case one for his intervention, sent the complaints to Hammond. In consequence of the widespread controversy and complaint which the calomel order caused Hammond sent a letter to many distinguished physicians throughout the United States asking them: "1st, To what extent do you prescribe Calomel and Tartar Emetic in your practice? 2nd, Do you regard these agents as indispensable in the treatment of disease? 3rd, In view of the facts that a large number of medical officers are young and inexperienced, and that soldiers cannot, in the field, be placed beyond the influence of atmospheric vicissitudes and exposure while undergoing medical treatment, would you recommend that the medicines in question be issued to Army medical officers, except as at present, upon special requisition? 4th, Do you, or do you not, think that more harm than good has resulted from the use of calomel and tartar emetic as medicines?"

"As may be supposed," says General Smith, "the responses to Hammond's letter varied greatly, and evinced many contradictory views. The order was defended by some and denounced by others. The most of the opposing opinion was from the valley of the Ohio and Mississippi. But they did very little to settle

the question at issue. Opinions however numerous, pro or con, could only have been evidence as to the existence of such opinions, but not evidence as to the guilt or innocence of calomel. So the order stood and General Hammond always maintained that issuing the order was a wise act.'"

A few days later, on May 7th, 1863, a new and still more ample Supply Table was issued. The Supply Table of the previous September had authorized the issue of calomel, but the new Supply Table failed so to do, though other mercurials were allowed. Practically, however medical officers got calomel when they wanted it on Special Requisitions as provided by the Surgeon General; but the Calomel Order materially curtailed the abuse of the drug.

In July 1863 the Surgeon General published to the Medical Officers a Report on Gunshot Wounds prepared under his direction by Surgeon John H. Brinton, including nine tables. These tables covered, (1) Gunshot Wounds, their Seat and Character, (2) Their treatment, (3) The character of the missiles causing them, (4) Amputations and their Results, (5) Excisions and Results, (6) Extraction of Balls, (7) Results of Trephining in 35 Cases, (8) Statement of Vessels ligated, and (9) Miscellaneous Operations.

This Report was followed September 8th, immediately after Hammond's removal from office, by a Report made by Assistant Surgeon Joseph J. Woodward under Hammond's direction, being a brief statement of some of the more important facts with regard to the influence of season and region on the Camp Diseases of the Army. It was accompanied by six tables and diagrams as to, (1) Monthly Mortality Rates, (2) Monthly Sickness Rates, (3) Monthly Rates of Camp Fever, (4) Monthly Rates of Intermittent Fever, (5) Monthly Rates of Diarrhoea and Dysentery, and (6) Monthly Rates of Catarrhal Affections.

These two reports were an earnest of good things yet to come in the Medical and Surgical History of the War of the Rebellion, for which the world owes an incalculable debt to the wisdom and foresight of Hammond, its projector.

In many ways he improved the status of the medical depart-

ment among which may be mentioned the liberal supply of medical books and journals, which has had so much to do with the efficiency of the army medical corps. He recommended the formation of a permanent hospital corps, the establishment of an army medical school, the location of a permanent general hospital at Washington, the autonomy of the medical department in construction of buildings and transportation of supplies, and the institution of a military medical laboratory.

In all his work however he was embarrassed by the fact that immediately after his appointment he incurred the displeasure of the Secretary of War and in the words of the Senate Military Committee in 1878, "it is reasonable, therefore, to infer that men of the positive natures possessed alike by Secretary Stanton and Dr. Hammond, would decline to yield or stand by for each other to pass, when they crossed and crowded upon what they conceived to be the path of mutual duty. When they collided it was the gage of battle hurled by both—a war by the Titans, a struggle for the mastery. One or the other must have fallen in a conflict of such natures; for there was no middle ground of accommodation between them. Secretary Stanton, in the extraordinary pressure of the times, no doubt became impressed that the displacement of Surgeon General Hammond would conduce to the benefit of the public service, and, possessing the greater power, accomplished, by means of indirection, the desired result."

The situation then, in the Fall of 1863, culminated in orders by the Secretary detaching General Hammond from his work in Washington. So confident was the General of his own rectitude and the justice of his cause that he demanded trial by court-martial both in person and through his friends. This was granted and he was tried upon charges and specifications alleging his involvement in the irregular purchase of certain blankets and other supplies and an apparent question of veracity between him and General Halleck. In no case was any criminality proven nor was the conduct demonstrated other than consistent with the proper management of the Surgeon General's office. The prosecution was intrusted to Judge Bingham of Ohio, who manifested a most bitter and partisan animosity against Hammond which re-

quired constant control by the court. Nevertheless, as was later confidentially reported by one of the members, the finding of the court was acquittal; this was not accepted, however, and the court was reconvened for reconsideration and only then found the General guilty and sentenced him to dismissal.

The trial left Hammond in great pecuniary embarrassment and it was only through the courtesy of a professional friend, who raised a purse for his benefit, that he was enabled, pending his ultimate vindication to proceed to New York where he had determined to make his home and where he became a high authority on diseases of the mind and nervous system. He was appointed lecturer upon that subject in the College of Physicians and Surgeons, and later successively occupied a professorship of the same specialty in Bellevue Hospital Medical College, the University of the City of New York, and the New York Post-Graduate Medical School, of the latter of which he was one of the founders. His practice became enormous and exceedingly lucrative and his custom of leaving, during his consultation hours, his office fees upon his desk in the form of a pile of twenty dollar bills was a common subject of comment among the profession.

He was remarkable for the wide scope of his attainments. In 1862 he gave a dinner in honor of Director General Muir of the British Army Medical Service at which many distinguished specialists in medicine and science were also present. General Smith was invited and asked to help entertain the guests, but at the close he felt that he had been very derelict in fulfilling his function because his attention was so distracted by listening to General Hammond whom he heard conversing with each man on his specialty and apparently as well posted in every case as the specialist with whom he was talking.

He wielded a most facile pen and even when carrying the enormous burden of directing the medical department in the greatest war in history, found time to produce a comprehensive work on Military Hygiene. His medical books consist chiefly of works devoted to nervous affections and of these his treatises on "Diseases of the Nervous System" and "Insanity in its Medical Relations" are the best known. A complete list of his professional

contributions however would be too bulky for this series of sketches. It is interesting to note that he also entered most entertainingly into the field of fiction and as well produced a number of successful plays. His "Son of Perdition" is thought by some to be the best novel of the Christ ever produced and others rank high in their class.

When in 1878, he had acquired an ample fortune he opened the campaign for the vindication of his conduct as Surgeon General, which, as already stated, resulted in his restoration to the army, and appointment as Brigadier General on the retired list; his private means being ample he waived the pay of the grade. He returned to Washington and took up his residence in a splendid mansion, built according to his own designs, and established a large sanatorium for the care of cases of nervous diseases. Here he gradually diminished his active professional work for various reasons prominent among which was a cardiac lesion from which he had suffered for many years. On the fifth of January, 1900, however apparently forgetful of his infirmity, he ran rapidly up the stairs of his house, and was found shortly afterwards powerless with profound dyspnoea and cardiac depression from which he was relieved only by the merciful hand of Death.

The portrait which accompanies this sketch is made from a carte de visite taken in 1862 while he was in active service as Surgeon General. General Hammond was a man of superb physique and fine presence, standing over six feet, two inches in height and weighing about 260 pounds. He had a powerful voice, a pleasing delivery, and a remarkable flow of language which rendered him always a popular and interesting speaker.

The life of General Hammond is a remarkable instance of a successful combat against adverse circumstances. An ordinary character would have succumbed to the blow dealt him by the court-martial of 1863. That he should then have boldly cast his lot in the greatest city with fiercest competition in the country and attained personal, literary and professional eminence in a decade, and should have, in less than a score of years, achieved a reversal of the sentence imposed upon him and a reinstatement in the grade from which he had been unjustly deposed, is a story as unusual as it is gratifying.

Reviews of Books.

PHARMACY AND MATERIA MEDICA FOR THE ARMY HOSPITAL CORPS.*

AN outline of Pharmacy and Materia Medica, gotten up under the direction of Captain Reynolds by Sergeant Leiblinger will appeal to many others besides the men of the Hospital Corps for whose use it is particularly designed. It is a remarkably clear, compact and succinct statement of the subject and embodies in limited dimensions in available form an astonishing amount of information.

TUBERCULOSIS AND ACUTE GENERAL MILITARY TUBERCULOSIS.†

THIS volume of the American edition of Nothnagel's Practice is most timely and of especial interest in military practice. The work is a most exhaustive study of the subject, touching as it does upon every phase of tuberculosis and its care and treatment. Ample consideration is given to the constitutional and climatic phase of its therapeutics and a complete bibliography demonstrates the thoroughness with which Professor Cornet has utilized the work of others in addition to his own. Professor James has made frequent interpolations from American sources fully adapting the work to the use of the American profession.

**An Outline of Pharmacy and Materia Medica for the use of the Hospital Corps U. S. A.* Compiled under the direction of Captain FREDERICK P. REYNOLDS, U. S. A., according to the Medical Supply Table U. S. Army, by JULIUS LEIBLINGER, Sergeant First Class Hospital Corps, U. S. Army. 12mo; pp. 73 with 17 illustrations. Washington, Government Printing Office, 1904.

†*Tuberculosis and Acute General Military Tuberculosis.* By Dr. G. CORNET, of Berlin. Edited, with additions, by WALTER B. JAMES, M.D. Nothnagel's Practice, American Edition, Vol. VII. Handsome octavo volume of 806 pages. Philadelphia, New York, London: W. B. Saunders & Company, 1904.

Original Memoirs.

OBSERVATIONS ON THE CAMPAIGN IN WESTERN PORTO RICO DURING THE SPANISH- AMERICAN WAR.

By CAPTAIN BAILEY K. ASHFORD.

ASSISTANT SURGEON IN THE UNITED STATES ARMY.

MAJOR General Nelson A. Miles landed at Guanica, Porto Rico on July 25th, 1898, with 3,554 troops, mainly volunteers from Massachusetts, Illinois and the District of Columbia. On August 1st he was reinforced by General Schwan's brigade of the 4th Army Corps and part of General Wilson's division of the 1st Army Corps. These reinforcements brought the strength of the American army in Porto Rico up to 9,641 officers and men. By the end of August the American forces had nearly doubled.

The Spanish forces, occupying chosen positions, numbered about 18,000 men, more or less equally divided between regulars and volunteers.

In a short time all the Spanish holdings, save the one at San Juan, were made untenable and a well planned expedition was brought to a sudden close by the peace protocol of August 14th, 1898, just as the guns of the central column were being trained on the Spanish trenches at the pass of Aibonito.

There were five engagements in all:—at Guanica road, Guayama, Coamo, Hormiguero and Las Marias, omitting the aborted attack on the mountain pass above referred to, one which promised a sanguinary and hard fought battle. The approximate total loss of Spaniards was 450, that of the Americans 43, in killed and wounded. The plan of campaign determined that one column should sweep off to the west, one to the east and one through the center of the island, with a starting point at Ponce in the south-

center, and a destination at San Juan where the three columns were to concentrate again. At the widest divergence of these columns diplomatic proceedings which culminated in a peace protocol nipped in the bud the onward march of our victorious army. Of the operations of this column which proceeded to the west and which was known as the Independent Regular Brigade, commanded by General Schwan, I will speak a few words before beginning an account of the surgical features of the campaign, believing that for a correct idea of the latter we must have some conception of the theatre of these military events. In this paper I have been much assisted by two works, Senn's "*Medico-Surgical Aspects of the Spanish-American War*" and Karl Hermann's "*From Yauco to Las Marias*". In describing the actual anatomical site of the wounds received I have quoted exactly from Col. Senn's clear and precise notes, adding to them such observations as I made at the time, of the first aid which they received on the field of battle.

Our column was composed of troops of the regular army. It was one brigade formed by the 11th U. S. Infantry, Light Battery D, 5th Artillery, Light Battery C, 3rd Artillery and the Hospital Corps. We were confronted by and had two engagements with a force composed of 850 of the Battalion Alphonso XIII, 200 of a battalion of volunteer infantry, 100 of cavalry, 40 of artillery, 60 guerillas, 52 volunteer guerillas, 30 marine infantry (volunteers) and a guard of 30, making a total of 1362 Spanish. Our forces rendezvoused at the small town of Yauco, six miles from Guanica, on the 8th of August, 1898. An uneventful and wearisome march was taken up on the morning of the ninth, twelve miles were accomplished and camp was made at Sabana Grande. The next day the march was resumed and ten miles was covered to San German. Here our seriously sick were left at the excellent Red Cross Hospital prepared for us by the native inhabitants, as word was brought that the Spanish garrison at Mayaguez were moving out on the road to contest our advance. These troops were nearly all regulars and presumptively would be able to make a sharp resistance. A few words on the condition of our troops at this time will be of much interest as bearing on their future history. Many of the men were recruits but of excellent physique.

During the voyage from Tampa, however, it became very evident that the baneful fever which so persistently menaced our camp in the United States was accompanying the troops in their trial at arms. No sooner had we left Tampa, than men began to sicken with typhoid fever. They were isolated on the deck of the transport, the only available mattresses—those in the officers' staterooms—were cheerfully given up to them and they were transferred to the "Relief" at Ponce. But this, unfortunately, was not enough to stop the encroachments of the disease and others were taken with it from the very commencement of the march, although most extreme care was exercised and a very complete supply of articles needful for the treatment of sick and wounded was provided by the thoughtful foresight of our chief, Major P. R. Egan, Brigade Surgeon. To us the axiom, the rationale of which has been so forcefully shown in Munson's work on Military Hygiene, since published, regarding the general liability of the recruit, and, above all, the young recruit, to disease and injury served to bring before us the danger of enlisting such men. Many of these young fellows, toiling along in the tropical sun, were utterly prostrated and required constant and watchful attention. Another note that should be made is that neither rum nor women played any part in the actual campaign.

Our line of march as far as Mayaguez was over an atrocious road, hilly but not mountainous, as we were following the coast; later, when we ascended the mountains from that town in pursuit of the fleeing enemy, the road became truly our greatest trial. The march was a trying one. Despite the slight distance covered, the effects of the tropical sun made each mile seem two and the eating of unknown and unripe fruit added the finishing touches to the oft repeated picture of the soldier "too tired to move on". They did move on, however, by the aid of the ambulances and the excellent common sense of their officers. The number of men thus affected was not very large and there was good discipline and excellent spirits to be observed among them. When, however, the march was resumed after a short rest in San German, the heat became very severe and, adding to the general discomfort, alternate showers and sun produced the effect of a vapor bath. Men and animals were hot and weary.

At about three o'clock in the afternoon we were in the center of a narrow valley, surrounded by mountains and with our objective, Mayaguez, beyond the line of hills which closed the outlet. Through this line of hills the road was seen to wind, ascending a few hundred feet before its dip to the sea on the other side. The road upon which we were proceeding bisected this valley longitudinally; between the road and the mountains to our left was a cane field and further on a marsh. On the right and about 1500 yards distant was the little town of Hormiguero on a hill, while parallel with the road on the same side ran the rivers Rosario and Grande, winding about in the low land and converting it into a swamp from the heavy rains. These rivers united here to cross our road where a wooden bridge spanned the stream. About a mile and a half from the wooden bridge was an iron bridge crossing the Rio Grande again. In other words, our operations took place in swampy land, overflowed by these rivers. On passing the road leading off the main road to Hormiguero, the Spanish outpost fired ineffectively into our troop of cavalry, two miles in advance of the main body, but they were quickly dispersed, the troop pursuing them clear into the town and taking position dismounted on the right of our line and under cover of the railroad embankment. This railroad ran from Hormiguero to Mayaguez, at first on our right, but later crossing the road beyond the second or iron bridge. Just beyond this railroad and on the hills it skirted, lay the Spanish troops, their line extending from midway between this crossing and the town to a little beyond the bridge. The road, then, along which we were traveling formed one arm of an angle of 22 degrees of which the Spanish position formed the other arm. Their position was well taken, strong and high, commanding our extent of line, with a railroad embankment, two rivers and swampy land between it and our troops. Ours was in the road with only a swamp into which the troops could deploy. Just before crossing the first wooden bridge was a deserted sugar mill on the left of the road and about a hundred yards from it. This was indicated by our brigade surgeon as the field hospital. It could not have been better placed. The efforts of the General were now directed to the high ground north of the iron bridge,

the heart of the Spanish position, effectively blocking our advance on the city of Mayaguez. The advance guard, deployed as skirmishers and supports in line of squads, advanced to within four hundred yards of the iron bridge when the firing broke out from the Spanish side. This advance guard was reinforced. The fire was now very extensive,—the range of fire on the advance guard being about three or four hundred yards and that on the main body with which the Spanish left and center were dealing, about 800 yards. Through this interval between our advance guard on our left and the cavalry on our right the main body received heavy volley firing, badly aimed but by chance striking a number of our men. Here it was that the General and his staff became much exposed and that his aid was shot. Up to this time the position of the enemy could be but illy determined but the two companies of the advanced guard rushed the bridge, the stream not being fordable, and, soon reinforced from the main body with infantry, two Gatling guns and two pieces of field artillery, crossed the iron bridge and, breaking through the Spanish front, occupied the high ground to the right of the railroad, where they were joined by the cavalry which had been threatening the enemy's left. The main body now came up and the Spaniards retired in utter rout, many leaving by a waiting train for Mayaguez. If that train had been hit by the several shots aimed at it by the field pieces this paper would have a wider field to cover. The fight was over at six in the evening and the ground beyond the enemy's position served as a bivouac for the night which had about set in. In this engagement heat, a laborious march of thirteen miles, a large amount of sickness, the swampy ground, with a confusing and extensive line of fire from an unseen enemy should add to the credit of the American troops of whom their General said in G. O. No. 14, * * * * "The Brigadier General Commanding desires to convey to the officers and soldiers of his command his thanks for their excellent conduct in the engagement they had on the 10th instant, near the town of Hormiguero, with the Spanish Forces in that vicinity. Concealed in a strong position, they poured a murderous fire into our troops about to go into camp after a fatiguing march".

THE WORK OF OUR MEDICAL CORPS.

In a short time after the commencement of the engagement the improvised field hospital was prepared for the reception of the wounded. The building was most admirably adapted for its purpose for it was perfectly dry and there was a spacious platform raised some six feet above the ground and capable of accommodating about 80 field cots, so that the wounded had an abundance of room. All the wounded were immediately succored and brought under the care of the medical officers where the first aid dressings were applied. They were then sent to the ambulances from these first aid stations by litter, only a short distance away. The ambulances were fortunately able to penetrate well toward the firing line and at the farthest to which they were permitted to go an ambulance station was established. Here they were loaded into the ambulances and taken to the field hospital near by, where they were placed on the cots prepared for them. This hospital was well arranged for their coming. A cleanly-swept floor, an immense air space, a modified light, quiet and a cool and comfortable temperature made it a desirable substitute for hospital tents. As all the surgeons were busy at or near the firing line, an efficient steward prepared for their reception, boiling instruments, preparing dressings, etc., few of which articles were fortunately needed. As soon as the first wounded were sent back, a medical officer accompanied them and took charge of the hospital. We were free from dust, flies and confusion and at no time was seen that horde of useless assistants, more anxious to aid the wounded than to take their proper places in the fight. No one seemed excited yet no time was lost. The writer was left in charge of the wounded by the Brigade Surgeon after the engagement. Here we quietly remained until the late afternoon of the 12th of August when I was ordered to convey them to Mayaguez and to proceed thence with the column. Some of the sick, in fact, most of them, had been carried on to the town by the other medical officers. Carrying this order into effect with all the dispatch possible, we arrived late at night on the 12th at the beautiful and cleanly town of Mayaguez where we had proof of the foundation of the boast of its people that it was the richest,

most modern and most hospitable of the island. Conducted to the theatre we found as perfect a Red Cross Hospital as one could desire, spotlessly clean and well equipped. Many will attest to the excellence of the aid extended to us by the Red Cross societies of these little towns, entirely composed of Porto Ricans and thoroughly subordinating themselves to the actual needs of our hard worked Corps. Here our ambulances were unloaded and I proceeded to the camp outside the town.

At this point the writer lost all track of the wounded as on the 15th of August the "Relief", bearing the Chief of the Operating Staff of the Army in the Field, Lieut. Col. Nicholas Senn, took all aboard and sailed. As this town is directly on the coast, no difficulties were encountered in transferring them to the ship. Thus the writer has recounted their later history from Col. Senn's clear account. In this engagement the medical officers were five. They were disposed, one with the cavalry one with the field hospital and the rest with the main body and the advance guard. The Hospital Corps were disposed in squads covering appropriate parts of the line. All wounded were removed from the field before the engagement was over. The following is a brief account of their injuries:

Case 1. Lieut. J. S. Byron, 8th Cavalry, detached from his regiment as aide on the General's staff. They were much exposed, as they were well forward in the line of fire. Several of their horses were struck and the above named officer was shot in the foot as he sat in his saddle, "the ball penetrating from side to side on the dorsal aspect, making a groove upon the upper surface of the second and third metatarsal bones without fracturing them". He was almost immediately attended by a medical officer and a first aid dressing was applied. He was conveyed to the ambulance in the road by litter and from thence to the field hospital. The wound healed by primary intention under the first dressing.

Case 2. Sergeant William H. Wheeler, Co. A, 11th U. S. Infantry, in the advance guard. He was "in a standing position with his side in the direction of the enemy, his gun down ready to reload. The bullet struck the tenth intercostal space, left side, in the postaxillary line, and made its exit about four inches from the spine in the lumbar region, close to the margin of the last rib". This man on being attended by the medical officer was immediately placed in the dorsal decubitus and conveyed to the

field hospital with great care, after he had received the usual dressing. Here he was given large doses of opium and was not redressed. The fear of the surgeons was that important viscera might have been injured, both in this and in the following case. Both of these cases suffered considerable shock and pain but both recovered.

On his return to Porto Rico this man was seen by the writer some nine or ten months later, serving with his regiment in San Juan, and he seemed to be in perfect health, although very vague neuralgic pains were complained of at times. I could not trace any definite relation between this neuralgia and the injury received at Hormiguero.

Case 3. Corporal Amos Wilkie, Co M, 11th U. S. Infantry, wounded by the enemy's volley firing in the deploying of his company. "The bullet entered the right lumbar region just above the crest of the ilium, mid-axillary line, and emerged about two inches to the left of the spine and four inches above the left sacro-iliac synchondrosis". This patient had symptoms of intra-abdominal injury but, after having received identically the same treatment as in the last cited case, within thirty six hours he was free from pain, vomiting and shock. Recovery.

Case 4. William Rossiter, Co G, 11th U. S. Infantry. "Shot through the inferior maxilla. The ball entered just below the margin of the bone on the right side, about an inch in front of the angle, and emerged over the angle of the bone on the opposite side, perforating the soft tissues of the neck in a transverse direction". When first seen by the surgeons the hemorrhage was severe. It was controlled by torsion of the ends of two small vessels at the wound of exit and aseptic compresses. The bone was not fractured on either side and healing was completed in a few days by primary intention.

Case 5. Private Henry C. Errick, Co C, 11th U. S. Infantry. "Wound of entrance in the left leg over the outer aspect of the middle third; the ball passed downward and inward and emerged about five inches above the internal malleolus". There was slight hemorrhage but no fracture. Recovery. Healing by first intention under the primary dressing.

Case 6. Corporal Joseph Ryan, Co A, 11th U. S. Infantry, with the advance guard. "Bullet passed through the ankle joint. Wound of entrance over the internal malleolus of the left leg". The first aid dressing was applied and the wound healed by primary intention. There was not the slightest evidence of infection or of synovitis.

Case 7. Private Samuel Copp, Co A, 11th U. S. Infantry, wounded while lying prone on the summit of the hill, taken by the advance guard. "He received a scalp wound over the dome of the cranium. 'Wounds of entrance and exit about two inches apart'. This man received none of the force of the bullet on his skull for not even one sign of concussion supervened. The wound healed by primary intention under the usual dressing.

Case 8. Private Arthur Sparks, Co C, 11th U. S. Infantry. Wounded in the lower third of the left thigh. "Wound of entrance on the external anterior aspect of thigh about five inches above the patella. The bullet passed directly backward, and came out on the opposite side, on the same level, without injuring the femur". Healing by primary intention under the usual dressing.

Case 9. Private Paul J. Mitzkie, Co D, 11th U. S. Infantry. "Bullet made a flesh wound three inches above the external malleolus, which healed in a few days by primary intention under the usual dressing.

Case 10. Private Daniel J. Graves, Co M, 11th U.S. Infantry; wounded by a deflected bullet in the thigh. "The bullet passed through the thigh in an antero-posterior direction, fracturing the femur at the junction of the middle with the lower third". This man suffered intensely for a few hours. The surgeon applied a first aid dressing to the wound of entrance, splinted the limb and conveyed him to the field hospital. Here the Brigade Surgeon, finding the bullet beneath the skin directly behind the wound of entrance, extracted it under aseptic precautions and he was reported by Col. Senn as follows: "A week after the injury the patient was in excellent condition, the wounds remaining aseptic and healing rapidly.

Case 11. Private John L. Johnson, Co D, 11th Infantry, received a gunshot injury of the left leg. "The bullet passed in an antero-posterior direction through the middle third of the leg, going through the space between the tibia and fibula". Healing by primary intention.

Case 12. Private George Curtis, Light Battery D, 5th Artillery "received a wound of the chest while in the saddle. The bullet passed through the chest from the second left intercostal space, in front, to the middle of the outer border of the scapula on the same side." A first aid dressing was applied by the surgeon, opium was given and he was placed in the semi-recumbent position. This man was one of the most seriously wounded and it was believed at the time that he would die. The hemoptysis was severe at first and coughing and pain was only relieved by the

large doses of opium. There was primary union of both wounds and there are no after effects reported.

Case 14. Private Samuel G. Fry, Light Battery D, 5th Artillery "was injured by a deflected bullet, as he stood by his gun. The bullet passed through the soft tissues in the right anterior axillary fold without doing any further damage". The wound healed under the first dressing by primary union.

Case 15. Corporal John Bruning, Light Battery D, 5th Artillery "The bullet passed transversely through the soft tissues of the right forearm on a level with the wrist in front of the radius and ulna. The bullet evidently cut the ulnar nerve and vein, as shown by the paralysis of the parts supplied by the nerve below the seat of the wound". A first aid dressing was applied and the wound healed by primary intention.

Killed: Private Fred Fenneberg, Co D, 11th U. S. Infantry, shot through the heart and instantly killed.

CASUALTIES ON THE SPANISH SIDE.

When the Spaniards retired they carried with them their wounded and placed them in the same Red Cross Hospital at Mayaguez. As I was under orders to go as soon as possible to camp I had no opportunity to ask the nature of their injuries nor, indeed to count them and have since been unable to find out anything about them but it may be stated that there were more of them than of our men. Only one of their wounded was left on the field of battle a second Lieutenant; he had fallen too near our firing line for them to get him and it was said by the surgeon who brought him into the American field hospital that he was discovered lying on the ground with two Spanish Hospital Corps sitting stolidly beside him. All three were brought in and he was found to have been previously treated by his own surgeons. His wound was a perforating one of the left thigh, the bullet having entered anteriorly and external to the hip joint and passing directly backward without injuring the bone. Some one had stuffed a rag soaked in Monsell's solution into the wound. In spite of this, this officer, under proper antiseptic dressings, entirely recovered in about two weeks. One other casualty occurred in a native Porto Rican negro, an unfortunate whose curiosity proved to be his end. He had approached on foot well into the firing line when he was struck by a ball in the region of the umbilicus and

died instantly, probably of hemorrhage. It was the source of greatest surprise to us all that more of these people were not hurt as even during the noise of the fight they kept getting into the most dangerous positions both from our fire and that of the enemy.

Summing up, then, the surgical results of this campaign we see the favorable effect of,—

1. The comparatively short time before we succeeded in bringing into action our enemy.

2. The character of the firearm used by the Spanish—a Mauser.

3. Our excellent medical and surgical equipment.

4. Our adequate number of medical officers and Hospital Corps men, the latter of whom did to the letter what was expected of them and did not unnecessarily interfere with wounds, bringing the wounded promptly to the first aid stations.

5. Our excellent field hospital and its favorable nearness to the field of battle.

6. The rest of forty eight hours in the hospital after these wounds were received.

7. The sensible preparations made for the reception of the injured by the Red Cross societies in Mayaguez.

It is also proper to be remembered that the wounded did not lie unattended on the field nor was there an instant when our troops wavered in this brisk little fight, necessitating any change in the location of our surgical base. Undoubtedly the rapid transfer of the wounded five days after their injuries, to a clean and modern hospital ship perfected their rapid cure.

It would be but repetition to dilate on the character of wounds produced by the high velocity, small calibre rifle, a subject now so ably discussed and well known to every member of this Association. Suffice it to say that no explosive effects were seen and that the Spaniards committed no such breach of the laws of war as using a deforming bullet. In the decent observance of all the modern conceptions of the civilized world concerning warfare the Spaniard in this campaign leaves no room for criticism. There was one well defined and carefully observed point worthy of note.

In the perforating wounds noted the wounds of entrance and exit seemed to be of equal size.

That our loss was not a greater one was to be remarked upon. Fully realizing the tendency of one to overestimate from the noise of battle the amount of damage done, it is nevertheless to be wondered at that with their tremendous fire more were not struck. Although our men were so efficiently handled, bad marksmanship was to be justly attributed to the enemy. Another point of interest is that more of the advance guard, so much more exposed, were not hit. There were only three of them struck and all the rest were with the main body.

Lack of space forbids my touching on the sick but some idea may be obtained by noting the fact that about one fourth were on the sick report August 27th. Our subsequent advance from Mayaguez into the mountains, a most laborious but rapidly consummated march ended in the engagement of Las Marias where in a position somewhat resembling that occupied by ourselves at Hormiguero the Spanish troops were forced to fly or surrender. There were no casualties on our side but a large number of killed and wounded on theirs—a number impossible to determine. Talking with an ex-Spanish soldier, now in our army, I learned that their greatest loss was in drowned, for in attempting to get away to the mountains beyond the river they were swept down the swollen stream and lost. Here the Colonel commanding, the Lieutenant Colonel, several officers and about sixty of the men were taken prisoners and our little part in the Spanish-American war was brought to a close.

In brief the casualties of the other three fights were:

At Guanica road: One killed and 15 wounded, of whom one died a day or two later. Most of the injuries here were flesh wounds.

At Guayama: One death and 11 wounded. Of these one was shot through the pelvis and one through the elbow joint. Both were reported by Col. Senn as doing well a few days later.

At Coamo: Here the Spaniards occupied a high position but were dislodged with a slight loss on our part.

THE DIFFERENTIAL DIAGNOSIS OF TYPHOID FEVER IN ITS EARLIEST STAGES.*†

BY WILLIAM COLBY RUCKER, M.D.,

ASSISTANT SURGEON IN THE PUBLIC HEALTH AND MARINE
HOSPITAL SERVICE.

THE term, "earliest stages," while it limits in a measure the ground to be covered by this essay, is vague and indefinite and may either include only the earliest prodromata or the first symptoms after the fever has commenced or both. The author understands the term "earliest stages" to include the period of incubation and the first seven days of fever, and has not, therefore, endeavored to eliminate diseases which complicate the diagnosis after this time only.

The differential diagnosis of a disease presenting such multiformity of aspect as typhoid fever is necessarily difficult, and especially is this true in its earliest stages, when few infectious diseases exhibit such great variations in their manner of attack and onset. The extreme variability of the clinical factors to be considered, the intensity of the infection, the resistance of the patient, the sanitary surroundings, all render it impossible to tabulate with any degree of accuracy, the differences existing be-

*In the following article the author has drawn extensively on many standard works and also upon the medical journals, both foreign and domestic. He is aware that too great an amount of medical compilation and redundancy is being imposed daily upon the medical public as original work, and has endeavored as far as possible to assemble only those facts which bear directly upon the subject in hand. He has fused his own experiences with those of many other observers and tried to give an impersonal resumé of the whole, endeavoring to treat the subject in its entirety, rather than make the paper an excuse for a dissertation on one particular point.

In the list of references, an attempt has been made to mention the name of every author whose work has been quoted, or from whom ideas have been borrowed for this essay. Experiments have not been quoted in detail, as they are at best uninteresting reading, and only the results of such work have been here recorded.

†The essay to which was awarded the second place in the Enno Sander Prize Essay Competition for 1903.

tween the earliest manifestations of typhoid fever and those of diseases which may resemble it. Were it possible to demonstrate with ease and certainty the presence of the bacillus typhosus or its products at every stage of the disease, these difficulties would cease to exist, but unfortunately no satisfactory method has yet been brought forward which fulfills all these requirements ideally.

During the period of incubation no entirely satisfactory bacteriologic method of diagnosis exists and even clinical signs are hazy and uncertain. Not only is it practically impossible to determine exactly the time of the receipt of the contagium, but it is equally difficult to mark the dividing line between the period of incubation and the actual commencement of the disease.

Different organs may bear the brunt of the infection and consequently the manifestations of the disease may be extremely variable; certain symptoms commonly present may be replaced or masked by others referable to the lungs, kidneys or to derangement of the mental functions. As Herrick has so truthfully remarked, typhoid fever is not only an imitator of other diseases but many other diseases imitate typhoid fever. Even the length of the initial period is variable, occupying from one to three weeks, and at such times patients are rarely under observation.

The many forms which typhoid fever may assume also form an obstruction to early diagnosis. It may be abortive, mild, severe, hemorrhagic, renal, pneumonic or ambulatory. It may be modified or masked by the strength of youth or the weakness of old age or childhood.

The ill-defined languor and indisposition, mental depression, headache, vertigo, sacral pain, anorexia, and irregularity of the bowels, in the absence of fever and physical findings, are in sharp contrast to the initial period of other febrile diseases, which during this stage generally present no manifestations. In those cases which come under close observation a careful examination of the temperature curve may show wide daily fluctuations of temperature, even though fever be absent. This taken into consideration with the symptoms will often put a careful clinician on the road to an early diagnosis. Pepper claimed to have been led

to anticipate an attack of enteric fever by the unusual dullness of hearing and persistent occipital headache, following a few days of malaise.

Epistaxis is of differential value simply as a part of the symptom-complex. It occurs, however, with far greater frequency in typhoid fever than in many other diseases, which are apt to be considered in the differential diagnosis. Its value is diminished chiefly by the fact that it also occurs early in cerebro-spinal meningitis and in acute miliary tuberculosis.

The first febrile symptoms mark the actual commencement of the disease, the fever gradually increasing, and accompanied early by slight, oft repeated chilly sensations. This occurs with such regularity that in cases ushered in by a hard chill and a sharp rise of temperature, typhoid fever is usually eliminated from the diagnosis at once. The temperature rises gradually with slight morning remissions and at the close of the first week usually reaches 40° C. The platted curve of these step-like gradations should be of great weight in the differential diagnosis. It should be mentioned in this connection, however, that while the gradually ascending temperature curve is typical of typhoid, there are cases occasionally in which there is a sharp initial rise in all respects similar to that of other infectious diseases.

Remittent malarial fever presents very irregular curves. Typhus, relapsing fever, scarlet fever, measles and smallpox all exhibit a sharp initial rise of temperature. Intermittent malarial fever presents paroxysms of fever hardly to be mistaken for the steady progression of enteric fever. The disease presenting the febrile movement most closely resembling typhoid is Malta fever. If the history of exposure be elicited, the diagnosis can only be made by the clinical and bacteriological findings. A differential diagnosis of this fever is almost impossible in the majority of cases without the aid of the microscope and the serum test.

It will also be observed that the pulse rate of typhoid fever, while it exhibits a striking parallelism to the temperature curve, is relatively infrequent and does not attain the rapidity which we are accustomed to find in like degrees of fever. In no other febrile disease does this occur with such regularity.

By the fourth or fifth day the pulse is already dicrotic and usually remains so throughout the disease. This occurs more often in typhoid fever than in all the other infectious diseases put together and as will be shown, is of great differential value.

Oddo and Audibert, in the *Gazette des Hopitaux*, under the title "*Le dicrotisme dans la fièvre typhoïde*," give some interesting facts illustrative of the character of the pulse of typhoid. They speak especially of the frequency with which dicrotism occurs during the initial period, stating that in the great majority of their cases it was present on the day of entry of the patient into the hospital. In a few cases this phenomenon was an early symptom only, disappearing in a short time. The authors accordingly recognize several types, dicrotisme ephémère, and dicrotisme persistant, the latter being subdivided into dicrotisme continu, dicrotisme secondaire and dicrotisme intermittent. In all, fifty cases were examined. Thirty-four of these presented dicrotism. Of these thirty-four, six were ephemeral and lasted from ten to forty-eight hours, and thirteen were continuous. In five cases the dicrotism was continuous but disappeared about the twentieth day and reappeared about the twenty-fifth, and continued until the close of the disease. This is the so-called dicrotisme secondaire. In thirteen cases the dicrotism was intermittent, continuing for two or three days, with an intermission of about the same length of time. From these cases, which were not selected, it would appear that the dicrotism, though valuable, is a variable sign and should be carefully searched for, even though absent when the patient is first examined.

The average pulse tension of typhoid fever is⁹ about 140. Just what diagnostic import is to be attached to this fact the author is not prepared to state. From his limited experience with the tonometer of Riva Rocca, he is led to believe that careful tabulation of the pulse tension in various diseases, together with the accurate recording of the various factors which may tend to raise or to lower pulse tension, will prove of considerable value in differential diagnosis.

Of great diagnostic significance are the roseola, which appear during the latter half of the first week, and are distributed upon the abdomen, chest and back. The roseolous exanthemata

of other infectious diseases in some cases resemble it, but rarely so closely as to deceive an experienced observer. Taken into consideration with the state of the spleen and the bowels, the time of the eruption and the subsidence of the rash, its succession of crops, its characteristic distribution and efflorescence, it is perhaps the most valuable single sign of the disease. Its value is enhanced by the fact that it is not preceded by an evanescent erythema as are most of the papular rashes of the acute exanthemata. Further, many reputable observers have recently determined that in the greater number of cases, the blood obtained from the rose spots contains the bacillus typhosus. \

The typhoid eruption appears later than that of any of the other exanthematous diseases; that of the r  theln appearing on the first, scarlet fever on the second, measles and smallpox on the third, typhus on the fifth, and typhoid on the sixth or seventh day of the disease. The rash of r  theln is bright pinkish-red and lasts but two or three days; that of typhoid comes on in crops and the entire rash lasts much longer. Scarlet fever presents a subcuticular flush which may be so intense that the patient's skin may have the color of a boiled lobster, yet a noteworthy fact is the exaggeration of redness at certain points so that the skin has a mottled appearance. No rash like this occurs in typhoid. The eruption of measles is macular. The macules are dusky red and tend to coalesce and arrange themselves in crescentic areas. The typhoid roseola are papular, bright pinkish-red and rarely coalesce. The papules of variola are shotty and do not disappear on pressure as do those of typhoid. Typhus presents a dusky subcuticular mottling. The typical typhoid eruption is raised above the level of the surrounding skin.

One of the most unique of recent diagnostic suggestions is that of Gibbes to recognize the rose spots by photographic processes before they are visible to the unaided eye. He uses an orthochromatic or non-halation plate, or in the absence of one of these, a ray filter. Care is taken to focus exactly and the development is not pushed too far. A slow developer is used. By this means he has in several instances anticipated the roseola by several days.

In relation to the skin manifestations of typhoid, mention may be made of the drug rashes which may tend to cloud a diagnosis. *Copaiba roseola* are found most often on the extremities and do not possess the bright hue of those of typhoid. Furthermore, they appear suddenly, itch, and disappear on the withdrawal of the drug. The rash of quinine and atropine both resemble scarlet fever more closely than they do typhoid. Turpentine produces a blotchy rash, scarlatiniform in character and only rarely resembling typhoid.

From the beginning of typhoid there is a progressive diminution in the number of white blood corpuscles. There is usually also a reduction in the number of red blood corpuscles and a corresponding decrease in the percentage of haemoglobin. The red cells rarely exhibit marked changes in form, size or color. The latter changes are found in most infectious diseases but the absence of leucocytosis is of significance in the elimination of pneumonia, cerebro-spinal meningitis, sepsis and other diseases usually accompanied with an increase of white corpuscles.

Although enlargement of the spleen is observed in all infectious diseases, it is of especial diagnostic significance in typhoid fever. There are reported cases in which it is demonstrable during the period of incubation but it is very unusual to find this condition before the middle of the first week. In few other infectious diseases does the enlargement occur so early or persist so long, if we except Hodgkin's disease and malaria. Exception must be made in the case of typhus, however, in which the enlargement occurs during the first days of fever.

The stools of typhoid fever present no chemical or physical diagnostic peculiarities, if the presence of the bacillus of Eberth be excepted. However, their thin liquid ochre-yellow "pea-soup" character, penetrating ammoniacal odor, tendency to separate into two layers, and their relative infrequency, will always call to the mind of the clinician, typhoid fever.

The diazo-reaction of Ehrlich may be found first occurring in typhoid from the fifth to the thirteenth days, and continuing while the disease is at its height. It is diminished in value by the fact that it may be found at times in pneumonia, scarlet fever,

malaria, variola, measles, septic conditions and advanced malignant disease. Its absence in a case which otherwise closely simulates typhoid, decides rather against the latter.

The negative role of profuse sweating, herpetic eruptions, jaundice, coryza, conjunctivitis and vomiting is to be noted. Profuse sweating would point rather to acute tuberculosis, relapsing fever, pyaemia, acute ulcerative endocarditis or acute articular rheumatism than to typhoid. Herpes occurs with frequency in malaria, pneumonia, epidemic cerebro-spinal meningitis, and after the ingestion of salicylic acid, but very rarely in typhoid fever. Jaundice would indicate Weil's disease, remittent malarial fever or acute yellow atrophy of the liver, rather than typhoid. Coryza and conjunctivitis at the onset would cause the diagnostician to incline more to the belief that measles or influenza existed; and vomiting would point to variola, typhus or cerebro-spinal meningitis, rather than to typhoid. "It must be emphasized that the ordinary symptoms of coryza—sneezing, increased secretion, conjunctival catarrh—are among the greatest exceptions, at least in moderately severe and severe cases of typhoid fever, and may be thrown in the balance against a diagnosis of typhoid fever. Severe infectious conditions with a predominating coryza generally have some other significance. Under such circumstances typhus fever and influenza especially would have to be considered."

Other symptoms referable to derangement of the respiratory organs, have not uncommonly to be taken into diagnostic account. For the most part they obscure rather than aid in the diagnosis. Epistaxis has already been commented upon. It depends, as do most of the manifestations occurring in the upper air passages in typhoid, upon the spongy hyperaemic condition of the mucous membrane. It is observed most frequently during the period of incubation and in the beginning of the febrile stage, and occurs in about seven per cent. of cases.

Tonsillitis and laryngitis occasionally occur early and from the fact that the bacillus of Eberth has been repeatedly isolated from these locations, it would appear that in some cases, at least, the initial infection takes place in these organs. It may also be

noted in this connection that the bacillus typhosus has been isolated from the sputum in the initial bronchitis sometimes met with. Just how much diagnostic weight is to be assigned to such findings it is hard to say, but with improved bacteriologic methods it may be considerable.

The field, which has long held forth the greatest promise of an infallible diagnostic method, has been that of bacteriology. As has been stated, these expectations have in part to be fulfilled, but much has already been accomplished; the bacillus typhosus has been clearly differentiated from the colon bacillus; the specificity of the agglutinating action of immune serum has been demonstrated; cultures have repeatedly been made from the rose-spots, urine, feces, sputum, and, what is of greater importance in the early diagnosis, from the blood itself.

Before considering the differences which exist between the bacillus typhosus and the colon bacillus, a brief description of the morphological and biological peculiarities of Eberth's bacillus will be à propos. The bacilli, as ordinarily seen, are short thick rods about the length of one-third the diameter of a red blood corpuscle. The ends are rounded and their width is about one-third their length. They are actively motile and possess large numbers of flagellae, which spring from the entire surface of the bacillus. In different environments the bacilli undergo various alterations in form, size and arrangement. This has been the cause of many contradictory statements in regard to the biology of the organism. Undoubtedly there does exist a group of organisms which are intermediate in their biological manifestations between the typhoid and the colon bacilli. Whether these belong to the colon group or to the typhoid group or are in a separate division is a mere matter of nomenclature; the fact that they have been repeatedly isolated from the blood of patients, and the fact that these organisms display the Pfeiffer phenomenon with immune serum, is sufficient proof of their existence. They will be considered at greater length under the discussion of the elimination of paratyphoid fever from the diagnosis of typhoid fever.

The typhoid bacillus displays facultative anaerobiosis and grows readily upon the various culture media, especially the

potato, at room temperature. The investigations of Gaffky into the cultural peculiarities upon the potato, have been the nucleus from which have sprung many valuable methods for isolating the typhoid bacillus.

Of the especial culture and biological differences existing between the colon and the typhoid bacilli little need be said. The longer and more numerous flagellae of the bacillus of Eberth, its greater motility, its cultural peculiarities on potatoes, litmus milk and glucose agar, and its specific reaction to the typhoid serum, render its recognition comparatively easy.

The reaction of the colon bacilli to the serum of guinea pigs immunized against it and the similar reaction of the paracolon group should be especially mentioned as differentiating them from the typhoid bacilli. To be sure the typhoid bacillus also reacts to these sera but only in the low dilutions and therefore would not deceive a careful and experienced observer.

The Widal method of serum diagnosis has probably received more space in the typhoidiana of recent years than any other single sign of typhoid fever. As this paper includes the differential diagnosis of typhoid fever in its earliest stages only, any prolonged discussion of the methods and shortcomings of the agglutination test, would be out of place.

The lysogenic action of the serum has proven in the hands of thousands of competent observers to be of inestimable value, but the statement of Widal that the reaction occurs as early as the end of the first week, has been fulfilled only in the minority of cases. It is unfortunate for the early differential diagnosis that the occurrence of the reaction is usually delayed until the tenth day and may not present itself until late in the disease. It is equally unfortunate, that the reaction occurs during health with the blood of individuals who have never had the disease; that it is found in the presence of other diseases, especially the acute infectious diseases; and that it sometimes persists for years after an attack of typhoid fever. It is to be remembered, however, that these errors are only apparent and that they occur only when the lower dilutions of the serum are used. With the higher dilutions and careful noting of the length of time elapsing before

the reaction occurs, the liability to error will be greatly minimized.

Only very recently, a method, which combines the serum reaction of Widal and the culture of the bacilli from the stools, has been introduced by Wolff of Hartford. It is very original and evidently practical, as will be seen by the following excerpts from Wolff's original article:

"The technique is very simple. A loop from the feces of the suspected case is smeared upon the surface of an agar slant in a prepared tube. From this first specimen one or more bouillon cultures are prepared. The bouillon must react from 1 to 2 per cent. *alkaline* with the n/10 acid, using phenolphthalein as the indicator. The infected bouillon is now incubated at the usual temperature for twelve hours, when we are ready to make the examination. A sample of the blood is taken at the same time the specimen of the feces is procured. This is mixed with the bouillon culture by the usual procedure and placed upon the stage of the microscope. If now there is sufficient agglutinative material present, the typhoid bacilli (if they exist in the culture) will very shortly form clumps in the fields, which will be observed full of colon bacilli in active motion; and if this reaction does occur, we can of course safely say that the case has advanced at least to the second week of the disease. Should no reaction occur, another sample of the bouillon culture is tested with the blood from an advanced case of typhoid fever, the agglutinative power of which has been tested by the ordinary method, with a pure culture of the bacillus of Eberth. Indeed it is necessary for the proper use of this test to keep in stock a number of specimens of blood from well-marked typhoid cases. These can be kept in a dry place, and they retain their power to produce a reaction with a pure culture, probably indefinitely. With this blood, if the feces contain any typhoid bacilli, a positive and distinct reaction will shortly occur, the clumps of typhoid bacilli being more or less numerous according to the number of typhoid organisms present; while the still motile colon bacilli occupy the rest of the field, and are seen to be in active motion. This indicates that the case is one of typhoid fever, and that the

disease is in an early stage, at least from the middle to the end of the first week. By means of this simple method we are enabled, 'in my opinion,' to make an accurate diagnosis in the early stages of the disease when the other symptoms may be more or less masked, and thus remove many elements of doubt in a suspicious case."

Within the past two years blood cultural methods have been constantly brought forward which demonstrated the bacilli in the general circulation. Recently, however, the bacilli have been demonstrated prior to the occurrence of the Widal reaction and, in a few instances, before the enlargement of the spleen or the appearance of the roseola.

The method of Seeman for examining the blood obtained from the rose-spots is perhaps the simplest. A drop of bouillon is placed over the sterilized skin and an incision made into the rose-spot through the bouillon. A little of the blood from the rose-spot is then squeezed out and mixed with the bouillon, which is examined by the ordinary cultural methods. The examinations of the blood obtained from the rose-spots is not without limitations, especially in the diagnosis. The spots do not appear before the sixth or seventh day as a rule and in doubtful cases may be absent even then. To be of value the rose-spot must be quite fresh, as the old bacilli are too weakened to grow well on ordinary media. Further, if the observer is competent to make a bacteriological examination of the fluid obtained from a rose-spot, he is just as competent to examine blood obtained by venesection.

The technique of this method of investigation is comparatively simple and can be easily carried out in any fairly well equipped laboratory. The most important factor is the avoidance of contamination. To this end, the arm at the bend of the elbow is prepared by the usual surgical methods and a wet bichloride dressing allowed to remain until the time of taking the blood. The hands of the operator are prepared as for an aseptic operation. A constriction is placed above the patient's elbow to distend the veins and the skin is anaesthetized by pure carbolic acid or ethyl chloride. A solid metal or glass syringe, provided with a tight piston and a sharp needle, is boiled five minutes.

The needle is passed directly into (not through) the vein, great care being taken not to contaminate it in any way during the procedure. Five cubic centimeters of blood are withdrawn and distributed equally between five Erlenmeyer flasks, each containing 100 c.c. of bouillon. These are well shaken to distribute the bacilli from within the clots, and incubated for twenty-four hours, when, if a culture is apparent, transplantations may be made on the various media. The original flasks may be incubated twenty-four hours longer and a stab culture then made on agar. If the hanging drop at this time shows a motile organism, a six hour culture in bouillon is made and the Widal reaction tried with a known immune serum. The results of this method have proven very satisfactory and its value in early diagnosis is shown by the fact that it occurs in about 87.5% of cases during the first week.

As an evidence of the high diagnostic value of blood cultural methods in diagnosing typhoid, may be quoted Schottmuller, who, in his series of 119 cases, discovered the bacillus of Eberth in the blood in 84%. The earliest case in which it was possible to make an examination was on the second day of the disease, and the result was positive. In a great many cases typhoid bacilli were discovered before the Widal reaction occurred. These investigations must naturally alter our idea of the pathology of typhoid, in that they show, that, throughout the entire course of the disease, the bacilli circulate in considerable number in the blood. This accounts for the occurrence of the roseola and remote inflammatory changes during the course of the disease.

Typhoid bacilli have been frequently isolated from blood obtained by splenic puncture. The date of their appearance in splenic blood is probably very early and, from a diagnostic standpoint, very important. This has, in the past, led many, "who rush in where angels fear to tread," to adopt this method of procedure, regardless of the very grave consequences which it may entail. The practice is now discountenanced by most investigators and has given way to the examination of the blood obtained from other sources.

Typhoid bacilli have long been known to exist in the stools and have been isolated in many cases, but only after the use of

much difficult laboratory technique. The great objection to the bacteriologic examination of the stools has been the extreme difficulty in separating the typhoid bacilli in pure culture, uncontaminated with the colon bacillus.

The method of Remy has proven successful in the hands of several investigators. The principle underlying it is the use of a medium which endeavors to approximate the chemical constitution of the potato, and to this end, definite amounts of asparagin and several of the inorganic salts are added. Just before using a little milk sugar and two drops of a 1 to 40 solution of carbolic acid are added to each test tube. The feces are diluted about 1 to 8000 and plated with the melted medium. At room temperature, colonies appear in forty-eight hours. The colonies are transferred to bouillon and examined for motility and also cultivated to determine gas or indol production. By this method the bacilli have been found in several reported cases before the occurrence of the Widal reaction.

Several other equally good methods, each working on a different principal, have been introduced within the past two years. That of Hiss has met with considerable approval and, as he has outlined his method with far more clearness than the author can, a portion of his original article on the subject is herewith inserted:

"Two media are used; one for the differentiation of the colonies of the typhoid bacilli from those of the colon group, by plate culture; and one, for the differentiation of these forms in pure culture, in tubes.

"The plating medium is composed of ten grammes of agar, twenty-five grammes of gelatin, five grammes of sodium chloride, five grammes of Liebig's extract of beef, ten grammes of glucose and 1000 c.c. of distilled water. The final titration of this medium should indicate the presence of about two per cent. of normal acid, (1.8% to be exact), phenolphthalein being the indicator; and the medium should be brought to this acidity by the addition of normal hydrochloric acid solution.

"The growth of the typhoid bacilli in plates made from this medium gives rise to small light greenish colonies with irregular

outgrowths and fringing threads. The colon colonies, on the other hand, are much larger, and, as a rule, are darker and do not form threads. This medium is practically solid and the differentiation seems to depend upon the fact that typhoid bacilli form threads in a medium of this acidity when pepton is absent.

"The tube medium contains five grammes of agar, eighty grammes of gelatin, five grammes of sodium chloride, five grammes of Liebig's extract of beef, ten grammes of glucose and 1000 c.c. of distilled water, and should react 1.5% acid, phenolphthalein being the indicator.

"In this semi-solid medium the growth of the typhoid bacillus produces uniform turbidity at 37° C. within eighteen hours. The colon cultures do not give the uniform clouding and present several appearances, dependent upon differences in the degree of their motility, and upon their power to produce gas in the medium.

"The usual method of making the test is to take enough of the specimen of feces, that is, from one to several loopfuls and transfer it to a tube containing broth, making the broth fairly cloudy. From this emulsion five or six plates are usually made by transferring one to five loopfuls of the emulsion to tubes containing the melted plate medium, and then pouring the contents of these tubes into Petri dishes. These dishes, after the medium has hardened, are placed in an incubator at 37° C. and allowed to remain for eighteen to twenty-four hours, when they are ready for examination. If typical colonies with fringing threads and outgrowths are found, the tube medium is inoculated from them and placed in the incubator at 37° C. for eighteen hours. If these tubes then present the characteristic clouding, our experience indicates that the diagnosis of typhoid may safely be made; for the bacillus of typhoid alone, of all the organisms occurring in feces investigated during these experiments, has displayed the power of giving rise both to colonies with fringing threads in the plating medium, and the uniform clouding in the tube medium, when exposed to a temperature of 37° C.

"A diagnosis may thus be made in thirty-four to forty-eight hours. If doubt is entertained as to the distinctiveness or value of these characters, the bacillus may be further tested against a dilution of typhoid serum."

Higley believes that the method of Hiss has given slightly better results in his hands than the Widal reaction. It has occurred in a few instances earlier by several days. The method is more difficult than the cultural examination of the blood. It remains to be seen if it is in any way superior to it, but this does not detract from its value as a link in the chain of diagnostic evidence.

It is doubtful if the bacillus typhosus occurs in the urine sufficiently early to be of material aid in the early diagnosis. In a few isolated cases they have been found as early as the sixth day, but this is very rare. Later they may occur in such enormous numbers as to cause a peculiar shimmer when the urine is shaken.

What has been said of the urine applies even more forcibly to the expectoration, sweat and expired air. That the first may contain the bacillus of Eberth, early in the disease, is not to be denied; but this occurs most often in typho-pneumonia, which is a rare early complication. The elimination of the bacilli in the sweat, tears and expired air is too infrequent to entitle them to diagnostic importance.

The method of Moore acts upon the combined principles of the lysogenic action of the colon serum and the motility of the typhoid organism. In one arm of a W-shaped tube containing bouillon, to which has been added the serum obtained from a rabbit immunized to the colon bacillus, is planted a loopful of the culture from which it is desired to obtain the bacillus typhosus, uncontaminated. The serum causes the Gruber reaction to occur with the colon bacilli and they are agglutinated and precipitated. The typhoid bacilli emigrate and may be obtained in pure culture in the other arm of the tube.

Still another method is that of Biffi, who also utilizes the agglutinating serum of the bacterium coli. Contrary to Cambier, he found that the colon bacillus would pass through an earthen filter quite as readily as the bacillus typhosus. He accordingly first introduces the substance to be examined into bouillon, to which has been added a serum which will agglutinate all the varieties of the colon bacilli. This is prepared according to the

method of Pfeiffer for preparing typhoid agglutinating serum. The rabbit which is to furnish the serum should be injected with all the varieties of the colon bacilli; so that he shall be equally immune to all the varieties, and his serum able to agglutinate any species of the colon bacilli, which may be present in the substance to be examined. This serum should be tested as to its agglutinating power and a quantity added to the bouillon proportional to its agglutinating ability.

The foregoing has considered the general data for diagnosis and has indicated their application in a few instances. The specific differences, which exist between typhoid fever and the diseases which may resemble it, must now be considered.

During the developmental period of the acute exanthemata, they may present symptoms which will render difficult the differential diagnosis. This is especially true of measles, scarlet fever, variola and typhus. The knowledge of exposure to any one of these diseases will of course aid materially, but the most reliance can be placed upon the initial symptoms. Perhaps the earliest manifestation of all the eruptive diseases occurs in the pharyngeal mucous membrane; such involvement is very rare in typhoid fever. The coryza and conjunctivitis of measles, the angina of scarlet fever, and the initial backache of smallpox are all in contradistinction to the onset of typhoid. Variola presents in addition an initial rash, which may be as diffuse and vivid as a true scarlatina. A careful observation of the wrists and hair line for shotty papules will usually prevent error.

Confounded and associated under the same name until the middle of the nineteenth century, it is not surprising that, even at the present time, some difficulty may exist in making an early and accurate diagnosis between typhus and typhoid fevers. Prior to the appearance of the eruption it may be almost impossible. The uneventful period of incubation, followed by a chill and an abrupt and rapid rise of temperature; the extreme rapidity of the pulse; the early vomiting and extreme prostration of typhus are in sharp contrast to the step-like gradations of temperature, slowness of the pulse, and absence of early vomiting and prostration, of typhoid fever. Proportional to the rapid

rise and severity of the fever are the profound disturbances referable to the derangement of the nervous system which occur earlier and with greater severity than in typhoid.

Not infrequently, typhoid patients continue on duty during the first ten days of the disease, and delirium and coma do not occur until late. In typhus, on the other hand, they are prostrated at the very onset of the disease, and delirium, stupor and coma may rapidly succeed one another.

The blood findings of the two diseases present marked differences; typhus showing a moderate leucocytosis, while in typhoid, an actual diminution of the white cells occurs. Typhoid presents in the great majority of cases the specific bacillus before the expiration of the first seven days. Thus far no organisms have been found in the blood of typhus patients. Later typhoid blood shows the Widal reaction which does not occur with typhus serum.

Far more important and readier of demonstration are the skin eruptions of the two diseases. That of typhus occurs earlier and in typical cases presents such marked differences that the differentiation is easy for an observer of experience. It should be mentioned in this connection, however, that typhus cases do occur in which it is very imperfectly developed or entirely absent. The exanthem of typhus is distributed with uniformity over the trunk and limbs. It is neither well defined nor sharply limited. It is macular, hemorrhagic and distinctly petechial. It appears in a single crop, a second eruption being practically unknown. It has a dusky red, coppery hue, and appears as if beneath the surface of the skin. The eruption of typhoid, on the other hand, usually involves the trunk alone. It is sharply defined, papular and purely hyperaemic. It appears in crops, is bright pinkish-red and is slightly elevated above the surface of the skin.

The face of typhoid fever early exhibits bright eyes and slightly flushed cheeks, later a dull and apathetic countenance. Typhus, on the contrary, presents a swollen, livid red appearance with injected conjunctivae, contracted pupils and an agitated expression.

The disease which may occasion the greatest difficulty in early differentiation is acute miliary tuberculosis. Many cases

are under observation for weeks before the diagnostician can arrive at a conclusion, and then perhaps only after the recovery or death of the patient. Both have this in common, that the manifestations of each are due to the action of similarly acting toxins. The initial malaise, headache, anorexia and irregularity of the bowels is present in both. Each presents enlargement of the spleen but it occurs earlier and more markedly in typhoid. Both present the Ehrlich diazo-reaction and febrile albuminuria. The reddish spots which occur on the abdomen in miliary tuberculosis may cause confusion. They do not appear in crops and are much less abundant than the roseola of typhoid. Profuse sweating occurs much more often in miliary tuberculosis. An important difference occurs in the temperature-pulse curve of the two diseases, the marked irregularity of temperature, with a proportionately rapid pulse, of acute phthisis being quite the opposite of the steady ascent and comparatively slow pulse of typhoid. Acute phthisis presents Kernig's sign; typhoid, never. Dicrotism is rare in miliary tuberculosis. There may be, though unusually, a leucocytosis in acute tuberculosis, and the bacillus tuberculosis has been found in the blood of a few cases. The absence of leucocytosis would not necessarily decide in favor of typhoid; but the discovery of the bacillus of Eberth in the blood, or the occurrence of the Widal reaction, would. The relative increase in the large mononuclear leucocytes found in typhoid does not occur in acute tuberculosis. In the minority of cases the eye-grounds show choroidal tubercles. This is a decisive condition when present. Tubercle bacilli are rarely found in the sputum of an acute tuberculosis and the lung findings may be exactly the same at the beginning of both diseases. There is, however, a greater tendency to respiratory frequency and slight cyanosis in miliary tuberculosis. Curschmann considers acute pulmonary emphysema "an especially decisive objective sign" never occurring "as the result of typhoid bronchitis."

In peritoneal tuberculosis, the persistent abdominal pain and physical signs of effusion will make the diagnosis. Very early a decision will rest upon the physical findings indicative of tuberculosis of other organs.

When the tubercular meningitis accompanies the general process, the diagnosis is rendered somewhat easier. The sudden onset with a convulsion or severe headache and high fever; the agonizing pain; projectile vomiting; hydrocephalic cry and contracted pupils go to make up a picture widely different from that of typhoid. The pulse of basilar meningitis is at first small and rapid. Subsequently it is as slow as in typhoid, but is irregular and rarely dicrotic. Quinke's lumbar puncture should never be omitted in doubtful cases. If the tubercle bacilli be present, they will be discovered on centrifugalization of the spinal fluid, and will of course determine the diagnosis.

Cerebro-spinal meningitis, however, is not so readily differentiated from those cases of typhoid ushered in by headache, photophobia, delirium, reaction of the head, twitching of the muscles and even convulsions. It is easy to make a decision when an epidemic of one or the other is prevailing, but it is in sporadic cases that the chief difficulty lies. The irregular and variable temperature, the marked increase in the polynuclear leucocytes, and the profound psychical disturbances have no great resemblance to typhoid. The cutaneous symptoms of the two diseases are very different. Herpes occurs with great frequency in cerebro-spinal meningitis but almost never in typhoid. The rash of the first is petechial and is sometimes distributed over the entire skin. That of the latter is hyperaemic and usually limited to the trunk.

The examination of the fluid obtained by lumbar puncture for the diplococcus intracellularis meningitidis of Weichselbaum is the most reliable method of diagnosis. Blood cultures should also be made to determine the presence of the bacillus of Eberth and, with the newer bacteriological methods, will prove of great value.

Meningitis or cerebral abscess from ear disease may sometimes resemble typhoid. The history of sudden cessation of a chronic ear discharge, followed by a rise of temperature, nausea, vomiting and the symptoms of an acute septic infection engrafted on an existing chronic saprogenic suppuration, would certainly point to a purulent meningitis. The careful examination of the mastoid will sometimes render a decision.

Irregular forms of malarial fever, particularly when due to infection with the aestivo-autumnal parasite, may closely resemble typhoid fever. The onset of typhoid differs from that of remittent fever, in that that of the former is gradual and progressive, with slight chilly sensations and step-like gradations of temperature which rarely reach 40° C. before the fourth day; while the onset of remittent fever is generally intermittent, with severe chills and irregular remissions of temperature which may reach 40° C. in twenty-four hours or less. The temperature of malarial fever disappears under the use of quinine, while that of typhoid is not influenced by it. The grayish color of the face, the sub-icteric sclera, and the anxious, restless expression of remittent fever are all quite the opposite of the facies of typhoid, which early presents flushed cheeks, clear sclera, and an alert but not anxious countenance. Herpes are common in aestivo-autumnal fever but rare in typhoid. Early delirium is rare in typhoid but when occurring is persistent and variable only in degree. The delirium of remittent fever, on the contrary, may come on in the early days, is recurrent and changes with the exacerbations of temperature and other symptoms.

An increase of the lymphocytes to 40% or over, without any increase in the large mononuclears, points to typhoid as against malarial fever. An increase in the large mononuclears to 12% or upwards, especially during the remissions of temperature, indicates malaria rather than typhoid. The presence of myelocytes in any such number as from one to five per cent. indicates malaria rather than typhoid. A high degree of anaemia is more common in malaria. A very great reduction in the total leucocyte count is more frequently met with in malaria than in typhoid fever; while the proportion of white to red corpuscles in malaria is not infrequently less than one to two thousand, which is rare in typhoid fever.

Finally, it is to be noted, that cases have been reported in which typhoid fever is superimposed upon a malarial infection; and that, in these cases, the blood not only contains the bodies of Laveran but also the typhoid bacillus. Fortunately such an occurrence is rare, at least it is rarely recognized; but the knowl-

edge that such double infections do occur will sometimes call for more careful clinical and bacteriological examination.

Remittent fever presents no typical exanthem and the urticaria, which occurs not uncommonly, is very different from the roseolo of typhoid. The early anaemia of aestivo-autumnal fever is not found in typhoid. The blood in the former shows leucocytosis, without diminution in the eosinophiles; that of the latter, no leucocytosis, and marked diminution of the eosinophiles. Further, typhoid blood shows no malarial parasites or pigmented leucocytes, but, on the contrary, the typhoid bacilli and the Widal reaction.

Plague may occasionally be mistaken for typhoid fever but the reverse will very rarely happen. The history of exposure to plague may be obtainable, though not commonly. The period of incubation of plague is much shorter than that of typhoid, nine days being the extreme limit. The prodromes may be entirely absent or at least of such mild character as to be unnoticed by the patient himself. Occasionally, they may exactly duplicate those of typhoid, but pain and stiffness in the joints, and tenderness in the groins or axillae will be present also in the glandular type. The stage of invasion with chills, rigors or sensations of heat is in sharp contrast to typhoid fever. In *pestis siderans*, the overwhelmingly sudden onset, with rapidly succeeding delirium, vomiting, hematemesis, hematuria, melaena, coma, collapse and death, has no parallel in typhoid fever. The presence of the *bacillus pestis* in the blood and the reaction of the serum to Pfeiffer's phenomenon are final distinguishing points from typhoid.

Influenza of the gastro-intestinal form may be readily mistaken for typhoid. The abrupt onset, early prostration and multiplicity of symptoms found in typical cases of influenza are very different from the gradual onset of typhoid. The absence of splenic enlargement and the typical roseola in influenza should also be noted. In those typhoid cases in which the nervous element preponderates, examination of the blood may be necessary to make a diagnosis. The presence of an epidemic, the contagious nature of the affection, and the presence of Pfeiffer's organism all point to influenza.

Cases of typhoid presenting marked pulmonary symptoms at the onset may readily be confounded with lobar pneumonia. On the other hand, cases of pneumonia with insidious onset may be mistaken for typhoid fever. This is particularly true of the so-called senile pneumonias, and also of those cases in which the pneumonic process commences in the center of the lung. Osler says: "Nervous symptoms are more frequent in pneumonia than in typhoid, and from the onset may so dominate, that the local lesion is entirely overlooked." The absence of leucocytosis in typhoid, and the presence of Eberth's bacillus in the blood and the dejections are of great differential value. The presence of the Widal reaction will, of course, be decisive. If the bacillus typhosus be found, the case may be considered pneumo-typhoid. It should be mentioned in this connection that there occur, not infrequently, cases in which a diplococcus pneumoniae is engrafted upon typhoid. It is not to these cases that the term pneumo-typhoid is applied, but to those whose manifestations depend upon the bacillus of Eberth alone.

Pyæmia and other septic processes may sometimes require differentiation from typhoid fever. It is in such cases that the examination of the blood, with the view of determining the presence of Eberth's bacillus and the Widal reaction, and the absence of leucocytosis in typhoid, will prove of great value. In differentiating typhoid from puerperal septicaemia, the fact, that pregnant women ill of typhoid usually abort, may sometimes prevent error. The appearance of the roseola and the serum reaction will end all doubt in the matter.

Another pyæmic process which may occasion great difficulty is malignant endocarditis. Both diseases present enlargement of the spleen, abdominal tenderness and diarrhoea; each shows delirium, stupor and progressive exhaustion. If the heart was previously intact, symptoms referable to a cardiac lesion would be almost pathognomonic, as ulcerative endocarditis complicating typhoid usually occurs very late in the disease, at a time when the diagnosis has already been made. The temperature of ulcerative endocarditis is less regular in type than typhoid, and chills and sweats are far more common. Leucocytosis is marked in malignant endocarditis but is absent in typhoid unless inflamma-

tory complications occur. Furthermore, cardiac distress occurring in the course of typhoid is usually devoid of the extreme oppression and shortness of breath of endocarditis.

Infectious osteomyelitis, the "typhe epiphysaire" of Chassaig-nac, may simulate typhoid. The examination of the epiphyseal regions of the long medullated bones, and the inspection of the extremities for oedema, livid redness, and points of circumscribed tenderness will yield valuable information. Another diagnostic point is the presence of leucocytosis and the absence of the serum reaction and the specific bacilli from the blood, in osteomyelitis.

As has been previously pointed out, Malta fever may very closely resemble typhoid. The temperature curves of the two diseases may be almost identical, and both give rise to headache, insomnia, and anorexia. The presence of the micrococcus *Melitensis* in the blood, and the serum reaction with this germ would be diagnostic of Malta fever. Probably the micrococcus is present in all the dejections. It has been isolated from the urine and blood repeatedly. Sweating and violent joint pain are common and early symptoms in nearly all cases of Malta fever. Joint pain may occur early in typhoid also, but rarely with such severity as mentioned above.

Relapsing fever, at the onset or at the beginning of an epidemic, may be mistaken for an anomalous typhoid. The temperature of *febris recurrens* nearly always rises suddenly at the onset and remains in the neighborhood of 40° C. from three to seven days, when it suddenly falls by crisis. High initial temperatures are rare in typhoid, and a fall by crisis practically unknown. The presence of the spirillum of Obermeier in the blood of relapsing fever, and the bacillus of Eberth in that of typhoid, together with the rarity of relapsing fever, all aid in the diagnosis.

There are times when trichiniasis with predominant gastroenteric symptoms may closely simulate typhoid fever. Distinguishing points are the presence of vomiting, oedema of the face and eyelids, and extreme myositis in trichiniasis. Trichiniasis rarely presents the characteristic typhoid roseola or the enlargement of the spleen. The flexor contractures of the arms and legs, the painful swelling and tension of the muscles, the profuse

sweating and itching of the skin, all make a much different picture from typhoid. The marked leucocytosis, especially the extraordinary increase in the eosinophiles, is in strong contrast to typhoid. The examination of a portion of the pectoral muscles will render final decision.

"Trichinosis and typhoid fever have been frequently associated, but most commonly the trichinosis has been in the patient and the typhoid fever in the mind of the physician. The association in the patient of these two diseases appears to be exceedingly rare." There are only two reported cases to be found in the literature of the subject and this extreme rarity would almost exclude such a condition from the diagnosis, but might, in some cases, require an examination both of the blood and the muscle section.

Weil's disease with marked gastro-intestinal symptoms may sometimes simulate typhoid. Its mode of onset, the history of exposure to cold, and the fact that it occurs most often in brewers, butchers and ice plant laborers, are all diagnostic points. The jaundice is severe and early. As has been before pointed out, this occurs but rarely in typhoid. The temperature is high and remains so from the beginning of the disease. There is usually enlargement of the liver and subcutaneous oedema over the hepatic area. The blood may contain the bacillus proteus fluorescens, which is in marked contrast to the bacillus of Eberth,

Very mild cases of typhoid are apt to be diagnosed simple continued fever, in the early stages especially. The examination of the blood for Eberth's bacillus and the Widal reaction will settle the diagnosis.

During an epidemic of typhoid fever, catarrhal enteritis, especially in children, may give rise to symptoms like a mild or abortive attack of enteric fever. The absence of splenic enlargement, the rose spots and the Widal reaction will usually determine the disease.

Papular syphilides may resemble the typhoid roseola. Usually they are easily differentiated, but Curschmann speaks of a case in which not only the eruption but also the general symptoms closely simulated typhoid. On the whole, a papular syphilide is of a darker and more coppery hue and more generally distributed.

In these cases the history of a preceding initial lesion may aid materially.

Acute glanders with marked gastro-intestinal symptoms may be suggestive of typhoid. However, the characteristic rash and the presence of the bacillus mallei will make a diagnosis. The use of mallein for diagnostic purposes is also of value.

Cases of prolonged appendicitis with slow onset will present differences which require careful investigation to be discovered. The pulse will be higher in proportion to the fever, and there will be much smaller remissions of temperature, and rarely roseola or the diazo-reaction. There is marked leucocytosis.

Weiss, in his admirable paper read before the American Medical Association at the Chicago Meeting in 1900, detailed a method for the staining of blood to determine the presence of suppuration in the body. The stain he used is as follows:

Iodi sublim..... 1.0

Kali iodati 3.0

Aqua destill.200.0

Gummi arab. q. s. ad consistentiam syruposam.

A drop of blood taken from the lobe of the ear is carefully pressed between two cover glasses so as to get as thin a smear as possible. This is air dried or fixed, after which a drop of the staining solution is then added to the slide, and the specimen is then ready for examination with the microscope. Blood from a perfectly healthy individual shows a dark yellowish staining of the red corpuscles. The nuclei of the white corpuscles take on a lemon yellow colored very glossy appearance, while the body of the cell is a slightly darker yellow. Normal blood also contains brown granules (extracellular glycogen). The blood gives an altogether different reaction if suppuration be present. There is a great increase of extracellular glycogen, as shown by the large numbers of dark brown granules present in the stained blood. The leucocytes assume a brownish hue, varying in intensity from reddish brown to dark yellow. The polynuclear neutrophiles are almost exclusively concerned in this reaction, as it never appears in the eosinophiles.

The value of this method in eliminating suppurative appen-

dititis from the diagnosis is great. It is easy of application and in the hands of the author has proven very satisfactory.

An affection whose clinical manifestations may be identical with those of typhoid is paratyphoid fever. Since 1896, when Archard and Bensaude made their first report, eighty-four cases have been recorded; and, without doubt, many, which hitherto have passed as true typhoid, but which have presented no Widal reaction, except in low dilution, are to be classed under this head. The symptoms during the period of incubation are in most respects identical in the two diseases, headache, malaise, anorexia, irregularity of the bowels, rose-spots, enlargement of the spleen and a gradually ascending temperature being the rule. Epistaxis has been noted in a number of instances, and the diazo-reaction of Ehrlich may be given by the urine. In uncomplicated cases the blood shows no leucocytosis. On the whole, the paratyphoid is milder and rather shorter than true typhoid; but in the early stages a differential diagnosis may be almost impossible. In low dilutions of the serum, even the Widal reaction occurs positively.

The knowledge which we now possess in regard to this disease has been the result largely of the practice of making blood cultures, and this still remains the surest method of diagnosing the disease. Two species of paratyphoid bacilli are recognized. Buxton classifies them as the alpha and beta paratyphoids. The alpha produces less gas in glucose media and resembles the typhoid in its action on milk. It differs from the beta paratyphoid in that the acidity on litmus milk is persistent, while that of the beta paratyphoid is finally changed to alkalinity.

Both of the paratyphoid organisms present Pfeiffer's phenomenon with immune serum. As Pratt has clearly pointed out, the blood should be tested with both species of the paratyphoid bacilli whenever there is any doubt about the diagnosis. As an example of this, he quotes a case in which the serum gave a negative reaction with the alpha paratyphoid in 1 to 10 dilution, but completely clumped the beta paratyphoid in as high a dilution as 1 to 500. There may possibly be cases in which typhoid and paratyphoid coexist. At least it would seem so from some of the recent bacteriological findings. Pratt cites an instance in

which "Bain, working in Dr. F. C. Shattuck's wards at the Massachusetts Hospital, found a case of typhoid fever, the blood of which agglutinated the bacillus paratyphoid immediately and completely in dilution of 1 to 10. In higher dilution up to 1 to 200 there was clumping without loss of motility. There was no reaction with the typhoid bacillus in dilution of 1 to 10. A culture from the blood, however, yielded a pure abundant growth of the bacillus typhosus. The case died. Unfortunately no autopsy was held." Everything taken into consideration, the surest method of diagnosing paratyphoid from true typhoid lies in the cultivation of the bacillus from the blood of the suspected case.

There are times when the medical officer is called upon to make what might be called "a sanitary diagnosis," and to determine the presence or absence of typhoid fever. The writer refers to those cases in which epidemics of disease occur, *e. g.*, during the Spanish American War, and boards of officers are called upon to decide as to the nature of the infection. Under such circumstances, they would be required to make the diagnosis of the disease in its earliest stages but very rarely; as in the great majority of instances, cases in all stages could be seen, and by the averaging of the signs and symptoms in the various cases, and making close investigation into the food and water supplies, and the methods employed in the disposal of refuse, a diagnosis could be accurately arrived at.

CONCLUSIONS.

(1.) There is no single symptom on which alone an early diagnosis of typhoid fever can be made. It is only by careful consideration of the symptom-complex that a clinical diagnosis can be arrived at.

(2.) The most trustworthy, as well as the earliest, sign of typhoid fever is the presence in the circulating blood of the bacillus of Eberth.

(3.) The demonstration of the bacillus of Eberth in the blood is not beyond any fairly well equipped laboratory.

(4.) The bacillus of Eberth is found in the feces later than in the blood but with comparative ease. The presence of the bacillus typhosus in the feces is of great value as a corroborative sign.

(5.) The presence of the bacillus typhosus in the rose-spots is a trustworthy sign, but has no advantages over examination of the blood from other localities.

(6.) The serum reaction of Widal is seldom demonstrable during the earliest stages of typhoid fever. It is of value only in the higher dilutions.

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REPORT OF A CASE OF MALARIAL SCIATICA

By ELON O. HUNTINGTON, M.D.,
SURGEON IN THE UNITED STATES NAVY.

THE increase in our tropical service gives to the study of malaria, in all of its regular and irregular manifestations, an added interest to those of us who are destined to fight the disease in its native haunts. I venture to present a report of the following case, which came under my care at Hong Kong, as having some features rather out of the ordinary.

P. F., U.S.N., aged 35, native of the United States. Family history negative. Personal history negative. Habitual use of tobacco and alcohol to a moderate degree. Patient has been on duty in the Philippines for several months, during which time he has enjoyed his customary health except for an occasional attack of cephalalgia and facial neuralgia, from which he found relief by moderate doses of quinine. No history of typical malarial attacks obtainable.

On January 27 reported sick, complaining of severe pain over the course of the left great sciatic nerve, of greatest intensity immediately below its exit from the pelvis. Temperature, pulse and respiration normal; bowels regular; no history or evidence of traumatism. The disability and subjunctive symptoms characteristic of acute sciatica.

Examination elicited exquisite tenderness over the course of the nerve, but was otherwise negative. Patient was relieved from duty, given calomel to be followed by a saline, phenacetin, and put to bed with local application of counter irritation and hot water bottles to the area of pain.

January 28. Condition the same. From the history of neuralgia relieved by quinine, the suspicion that malaria might be the etiological factor in present condition, was aroused. A blood mount was examined by the Medical Officers of the Government

Civil Hospital at Hong Kong, who had kindly extended to me their laboratory facilities, and by myself.

The presence of quartan parasites was clearly demonstrated. With this evidence of the cause of the trouble, I decided to attack the disease with its specific enemy, locally as well as generally. The patient was put on full doses of quinine by mouth and injections into the sheath of the nerve. For want of a more soluble preparation, thirty minims of a hot saturated solution of the bisulphate was used, and the injection made immediately below the gluteal fold. That the needle reached the sheath of the nerve was evident from a brief paroxysm of pain extending to the toes.

Twelve hours later the pain and tenderness were slightly diminished, and the injection was repeated.

Twenty-four hours later the improvement in his condition was very marked and a third injection was given. At each of the injections a brief paroxysm of pain extending to the toes, was observed. From this time the injections were discontinued. The pain and disability rapidly disappeared and the patient was restored to duty, well, on February 2. The administration of quinine by mouth was continued at intervals during the remainder of the patient's tour of duty in the tropics, with no return of the symptoms above, or other evidence of malaria.

The use of quinine, by injection directly into the sheath of an affected nerve, was an original experiment, so far as I have been able to determine. The results in this case were so satisfactory that I shall be glad to have another opportunity to try it.

AN EPIDEMIC OF TYPHOID IN THE SWEDISH ARMY.

IN 1903 twenty-seven soldiers of the Gottland Artillery Corps (D. Fischer, *Tidskrift i Militar Hulsövard*) were taken with typhoid fever and four (19.8%) died. The cause of the epidemic was found in the drinking water that was brought through wooden tubes in which were found pieces of cloth, bones, potatoes, rat's skin, etc. The water was not clear but had no disagreeable odor or taste, although it contained nitrous anhydride and chlorine.—HANS DAAE.

THE UNITED STATES ARMY GENERAL HOSPITAL
AT THE PRESIDIO, OF SAN FRANCISCO,
CALIFORNIA, 1901-1902.

By COLONEL ALFRED C. GIRARD,

ASSISTANT SURGEON GENERAL IN THE UNITED STATES ARMY.

Part 3.

DISPOSITION OF PATIENTS.

ON July 1st, 1901, there were remaining in the Hospital 140 regulars, 72 volunteers, 29 discharged soldiers and civilians, and two general prisoners. Between July 1, 1901, and June 30, 1902, there were admitted to the Hospital 3910 regulars, 598 discharged soldiers and civilians, 15 volunteers and 5 general prisoners; and during the same period there were discharged from the Hospital 3629 regulars, 87 volunteers, 561 discharged soldiers and civilians, and 6 general prisoners.

The soldiers of the regular establishment discharged from the Hospital were either returned to duty, transferred to other hospitals or discharged the service on Surgeon's Certificate of Disability.

There were returned to duty 3535, transferred to other hospitals 503, and discharged on certificates of disability 401. Of those returned to duty a considerable part were not able for duty in the Tropics, nor for full duty in the United States, and such men were sent to convalescent companies at the Presidio of San Francisco, Angel Island, Cal., and Benicia Barracks, Cal. There were also sent to those companies many men who were able for full duty, but whose organizations were not in the United States. Soldiers discharged from the Hospital with more than three months to serve were sent to join their companies, provided their companies were in the United States.

Of those transferred to other hospitals, there were sent to the Army General Hospital, Fort Bayard, New Mexico, 147; to

the Government Insane Asylum, Washington, D.C., 130 ; to the Army and Navy General Hospital, Hot Springs, Ark., 81 ; to Fort Logan, Colorado, 109 ; to Benicia Barracks, Cal., 17, and to the Post Hospital, Presidio, San Francisco, Cal., 19.

Cases transferred to the Government Insane Asylum : This unfortunate class of patients was not disposed of until after careful observation on the part of the Ward Officer, supplemented by that of a Board of Medical Officers, of which the Superintendent of Medical Wards was the senior member. A soldier having been adjudged insane, certificates of disability were prepared to accompany him to the asylum.

Cases transferred to the General Hospital at Fort Bayard, New Mexico : Practically all of these men were suffering from pulmonary tuberculosis, and in a very large proportion of the cases diagnosis was rendered conclusive by the finding of the bacillus tuberculosis in the sputum.

To guard against transferring patients who had not the disease an order was issued requiring that all suspected cases should have their sputa examined for six consecutive days, and their temperatures taken four times daily for the same period. Cases with clear physical signs and symptoms were transferred, though the bacillus was not found.

Resort to the use of tuberculin as a means of diagnosis in doubtful cases was not made, nor was the x-ray used for that purpose. Notwithstanding the difficulty of diagnosis in some incipient cases, it is believed very few mistakes were made. A considerable proportion of the cases transferred to this Hospital from the Philippines with the diagnosis of pulmonary tuberculosis, have shown no physical signs nor symptoms of the disease after arrival here. It is not improbable that some such cases were in the incipient stage in the Philippines and that they were cured by the sea voyage home. Patients of this class were returned to duty after careful observation had resulted in non-confirmation of the diagnosis.

Of the cases sent to the General Hospital at Hot Springs, Arkansas, nearly all were transferred because of chronic rheumatism. A much smaller proportion were suffering from malarial

cachexia and gastro-intestinal disorders than was true of those transferred in the year ending June 30, 1901. Soldiers arriving here as patients from the Philippines with the diagnosis of rheumatism and a history indicating long duration of the disease were, as a rule, sent to Hot Springs after a comparatively short stay, experience having taught that such cases do poorly in this climate.

The transfer of 109 cases to Fort Logan was made at a time when it was necessary to make room for incoming patients. These men were, for the most part, convalescing from intestinal diseases, principally dysentery. Care was taken to exclude from among them such cases as might be expected to do better at other places.

CERTIFICATES OF DISABILITY.

As during the last year, so in this, the discharge of soldiers on certificates of disability has been an important work of the Hospital. 401 such discharges were made as follows:

1901.	
July.....	26
August.....	100
September.....	38
October.....	40
November.....	16
December.....	20
1902.	
January.....	33
February.....	10
March.....	30
April.....	40
May.....	27
June.....	21
Total	401

The manner of doing this work has been much the same as described in my last report. The Superintendent of Medical Wards has had immediate supervision. It has been his duty to verify the suitability for such disposition of all cases reported for disability discharge by ward officers. The following circulars and instructions relating to the subject have been in force during the year and will serve to indicate fully the routine modus operandi employed :

CERTIFICATES OF DISABILITY.

1. Each ward officer will make a report on the prescribed form to the Executive Officer at 10 A. M. on Monday and Thursday of each week, showing the names of patients who are fit subjects for discharge on Surgeon's Certificate of Disability or transfers to Fort Bayard and to Hot Springs. If there are no cases for such disposition he will so report on the printed form.

2. The following instructions relative to the preparation of Surgeon's Certificates in cases of disability are necessitated, viz.:

a. The surgeons should carefully read the printed instructions on the blanks and comply with them.

b. The first part should give the reason why a soldier is capable of performing the duties of a soldier, and not a clinical history. The words, "which disabled him," etc., which are usually inserted, are unnecessary.

c. An "Opinion" as to "Cause" of disability is required. This does not mean legal evidence, but an opinion formed from questioning the patient and weighing his answers by other information obtainable, in the same manner as an opinion would be given in a life insurance or accident policy.

d. The question of whether incurred in line of duty is often difficult to answer.

e. As a general rule, it must be assumed that any disability was incurred in line of duty, unless it is clearly established that it existed prior to enlistment and was not discovered at that time, or was the result of the soldier's own unlawful act. Even then an aggravation due to the service resulting in disability would entitle the soldier to a certificate, "in line of duty."

f. A disability contracted while on temporary absence such as a pass, would be in line of duty, while, if contracted on leave or furlough, is not in line of duty.

g. Careful attention should be paid to the degree of disability, and liberality may be exercised, as the degree in case of pension is fixed by the pension boards and the opinion of the surgeon is not final.

h. The certificates must be in the surgeon's own hand-writing and should be written as legibly as possible.

4. In making recommendations for discharge of soldiers for disability, and in the preparation of the necessary certificates, Medical Officers will be governed by the following instructions:

a. Form No. 51, properly filled in, together with form No. 103, in the latter of which will be written the verbatim certificate that the Medical Officer proposes to make, will be sent with the clinical history of the case to the Superintendent of Medical Wards.

b. The Superintendent of Medical Wards will examine the soldier who is recommended for discharge, scrutinize the papers submitted, suggest such changes as he may deem advisable, and see that the wording of the

certificate proposed conforms to the nosological classification of the Manual for the Medical Department of the Army.

c. Upon receipt back of the foregoing named papers, the opinion that the case is suitable for disability discharge being concurred in, the Medical Officer with whom they originate will prepare Surgeon's Certificates of Disability in triplicate, using therefor the official form, which he will then submit (through the Superintendent of Medical Wards) to the Commanding Officer, for his action.

As was noted in my last report. the frequent lack of definite information in transfer slips, descriptive lists and other official papers as to the manner of incurrence of wounds, diseases and injuries resulting in disability, has been a serious obstacle in the way of reaching an intelligent opinion in many cases on the important question of "line of duty." In such cases, when impracticable to obtain information from non-interested sources, it has unfortunately been necessary to rely on the sworn statements of the interested soldiers themselves. The extent to which this difficulty has presented itself may be best appreciated by a glance at the following statement.

Evidence obtainable.	No. discharged.
Interested Soldiers' sworn statement.....	183
Old Surgeon's Certificate of Disability.....	77
Old S. C. D. and interested soldiers' sworn statement..	52
Old S. C. D. and affidavits of non-interested persons..	18
Transfer slip and soldiers' sworn statement.....	22
Finding, Board of Medical Officers.....	15
Disability originated in this hospital.....	19
Transfer slips alone.....	7
Old S. C. D. and transfer slip.....	4
Interested soldiers' sworn statement and affidavits of non-interested persons.....	4
Total	401

Of these disabilities 310 were incurred in line of duty ; 84 were not incurred in line of duty ; and 7 were multiple disabilities, of which a part was and a part was not incurred in line of duty.

Twenty-three of the soldiers discharged in the month of July, 1901, were volunteers. Of the remaining 378, 35 were recruits. Of these recruits, a large number were found by a Board of Medical Officers convened by Department orders to have had disabili-

ties prior to enlistment. The number of this class discharged for defective vision was considerable, indicating a lack of knowledge of the army standard on the part of civilian physicians, by whom, without exception, these men had been examined for enlistment.

Of the other recruits discharged, the greater part was for disability resulting from eye and ear complications of measles, which complications had supervened while the men were in this Hospital under treatment.

The following tabulated statement, arranged according to the nosological classification of the Medical Manual, shows the cause of discharge for disability from July 1, 1901, to May 31, 1902 :

INFECTIOUS DISEASES:

Tuberculosis of the lungs.....	4
Sarcoma, Amputation for.....	1
Total	5

DISEASES OF THE NERVOUS SYSTEM:

Cephalalgia, Chronic.....	1
Chorea.....	1
Epilepsy.....	12
Hemiplegia.....	5
Opium habit.....	3
Paralysis agitans.....	1
Lateral spinal sclerosis.....	1
Meningitis, Effects of.....	1
Meningomyelitis.....	1
Neurasthenia.....	4
Neuritis.....	3
Vertigo.....	1
Total	34

DISEASES OF THE DIGESTIVE SYSTEM:

Appendicitis, Effects of.....	1
Adenosarcoma of mesentery.....	1
Dental caries.....	18
Hepatic cirrhosis.....	1
Rectal prolapsus.....	1
Total	22

DISEASES OF THE CIRCULATORY SYSTEM:

Cardiac irritability.....	3
Cardiac hypertrophy.....	4
Cardiac dilatation.....	1
Valvular cardiac disease.....	29
Varicose veins.....	2
Total	39

DISEASES OF THE RESPIRATORY ORGANS:

Asthma.....	6
Consolidation of lung, pneumonia.....	1
Pleurisy, Chronic.....	1
Empyema, Pleural.....	4
Total	12

DISEASES OF DUCTLESS GLANDS:

Goitre.....	1
Goitre, Exophthalmic.....	3
Total	4

DISEASES OF GENITO-URINARY ORGANS:

Enuresis.....	1
Nephritis.....	1
Chronic inflammation of spermatic cord.....	1
Retention of testicle.....	1
Total	4

DISEASES OF MUSCLES, BONES AND JOINTS:

Arthritis, Chronic rheumatic.....	2
Arthritis, Rheumatoid.....	1
Arthritis, Syphilitic.....	1
Arthritis, Gonorrheal.....	3
Arthritis, tubercular, Amputation for.....	3
Atrophy, Muscular.....	2
Exostosis.....	1
Floating cartilage in knee joint.....	1
Muscular deficiency.....	1
Osteomyelitis.....	1
Periostitis, Chronic.....	1
Paralysis, left deltoid and trapezius.....	1
Total	20

DISEASES OF INTEGUMENT AND SUBCUTANEOUS CONNECTIVE TISSUE

Bromidrosis.....	1
Corns.....	1
Total	2

DISEASES OF THE EYE:

Atrophy of optic nerve.....	1
Cataract	1
Choroiditis.....	2
Corneal opacity.....	7
Corneal opacity and detached iris, Traumatic.....	1
Glaucoma, Chronic.....	1
Iritis	3
Irido-cyclitis	1
Loss of eye, enucleation.....	4
Opacity of vitreous humor.....	2
Optic neuritis.....	2
Neuro-retinitis.....	2
Night blindness.....	1
Refractive errors.....	20
Rupture of sphincter iridis, Traumatic.....	1
Retinitis.....	4
Retino-choroiditis	5
Staphyloma, with prolapsus iridis, Traumatic.....	1
Trachoma, Chronic.....	1

Total,	59
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DISEASES OF THE EAR:

Otitis media.....	65
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Total	65
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ACCIDENTS AND INJURIES:

Amputations	8
Ankylosis.....	1
Bolo wounds and effects.....	5
Dislocations and effects	2
Fractures and effects.....	20
Gunshot wounds and effects	50
Hernia, Ventral.....	4
Hernia, Inguinal (refusing operation).....	19
Incised wound, Effects of.....	1
Insolation, Effects of.....	3
Lameness lower extremities, from contusion.....	1
Laceration of finger.....	1
Pes planus.....	4
Paraplegia, Traumatic.....	2
Rupture of ligaments, knee joint.....	2
Spinal concussion, Effects of.....	1
Synovitis, Traumatic.....	5

Scalds, Effects of	1
Talipes varus, Traumatic.....	1
Total	131
MISCELLANEOUS:	
Nasal catarrh.....	1
Defective mental development.....	1
Total	2
GRAND TOTAL	401

A percentage comparison of some of the causes of discharge of this year and in 1901 may not be without interest:

	PER CENT. OF WHOLE NUMBER DISCHARGED.	
	1901	1902
Infectious diseases.....	4.5	1.22
Diseases of Nervous System.....	9.0	8.47
Diseases of Digestive System.....	11.46	5.47
Circulatory system.....	7.25	9.72
Respiratory organs.....	2.73	3.00
Gunshot wounds and effects.....	26.0	12.21
Injuries and bolo wounds (exclusive of gunshot wounds).....	16.50	18.95
Diseases of the eye.....	6.09	14.46
Diseases of the ear.....	10.3	16.21
Diseases of Muscles, Bones and Joints.....	2.41	4.96
Genito-urinary organs.....	1.05	1.00

The following is a statement of the rate of discharge for disability per thousand admissions for the respective classes of diseases mentioned:

Infectious diseases.....	4.54
Nervous diseases.....	138.21
Diseases of the Digestive System.....	14.10
Diseases of the Circulatory System.....	413.48
Diseases of the Respiratory Organs.....	54.09
Diseases of the Genito-urinary Organs.....	25.00
Diseases of Muscles, Bones and Joints.....	84.38
Diseases of Integument and Subcutaneous Connective Tissue.....	18.34
Diseases of the Eye.....	621.05
Diseases of the Ear.....	833.33
Accidents and Injuries.....	507.75

Special diseases and wounds:

Pulmonary Tuberculosis.....	23.52
Gunshot wounds	833.33
For all admissions.....	96.90

While this table accurately represents the rate of disability discharge at this Hospital for the causes mentioned, it would be a mistake to believe that it indicates primarily the causes in all cases leading to this rate of discharge; and it would be a still greater error to suppose it to represent even approximately the rate of disability discharge from these causes, for the Army at large. The rate of 96.9 per thousand admissions from all causes appears extraordinarily large only before it is understood that a very large proportion of the soldiers treated here are sent here from the Philippine Islands for the express purpose of being discharged the service, because of the disabling nature of their diseases and wounds.

A good example of this is the large rate of 833.33 per thousand admission for gunshot wounds. Wounded men not permanently disabled are not sent from the Philippines except when their organizations are returning to the United States. On the other hand, the very small rate of 4.54 per thousand admissions of infectious diseases is misleading, unless it is understood that a large percentage of the disability cases coming under Nervous Diseases, Diseases of the Circulatory System, and especially, Diseases of the Eye and Ear, all of which give high rates, were really discharged because of the results of complications or sequelae of infectious diseases.

Nothing could be further from the truth than that 23.52 per thousand admissions for pulmonary tuberculosis represents the disability ratio for this disease, which disease, as would be expected, ultimately causes loss to the service either through death or discharge, of nearly all who contract it. To arrive at anything like accurate knowledge as to the ultimate rate of discharge because of this disease, based on cases admitted to this hospital, it would be necessary to know the subsequent history of the large number of cases transferred to the General Hospital at Fort Bayard, New Mexico.

THE INSANE.

From the nature of this class of patients it is obvious this Hospital can only make final dispositions of some cases. With this object in view, a small detached building, on the eastern

portion of the Hospital grounds, is so fitted up and arranged as to accommodate about fifteen patients and is denominated the Detention or Insanity Ward. It is under the charge of a medical officer and has three Hospital Corps privates on day and two on night duty as attendants. The patients are here kept under observation until their ward surgeon and a Board of three medical officers, of which the ward surgeon is a member, are satisfied as to their mental condition, when those who are considered to be insane are recommended to the Commanding Officer for transfer to the Government Hospital for the Insane, Washington, D.C., while those considered normal, mentally, are returned to duty or discharged as the case may be. The length of time required for this purpose is found to average about four to six weeks, and this period of time is usually quite sufficient for the ward to become filled with new arrivals.

One hundred and fifty-eight cases diagnosed as insane were received during the fiscal year :

Philippine Islands.....	145
Honolulu.....	1
Other sources.....	12

Classified according to status in the service they were as follows :

Regulars.....	139
Volunteers.....	1
Discharged soldiers.....	11
Retired soldiers.....	1
General prisoners.....	4
Civilians.....	2
Total.....	158

Classified as per diagnoses made, the cases were as follows:

Chronic alcoholism.....	2
Dementia.....	14
Dementia, secondary.....	7
Dementia, syphilitic.....	2
Dementia, chronic.....	6
Dementia, post alcoholic.....	6
Dementia, sub-acute.....	1
Dementia, simple.....	2
Dementia, terminal.....	1

Epilepsy, grand mal.....	13
Epilepsy, petit mal.....	4
Epilepsy, traumatic.....	1
Hypochondria.....	3
Insanity, delusional.....	5
Insanity, acute.....	2
Morphiomania.....	3
Monomania.....	1
Mania, acute.....	9
Mania, chronic.....	2
Mental deficiency, congenital.....	6
Melancholia, acute.....	50
Melancholia, chronic.....	13
Paranoia.....	4
Paresis.....	1
Total.....	158

During the year there were received 36 cases diagnosed as insane, in which the diagnoses were not confirmed. It is probably true that most of these cases, if not all, were insane at the time that they were transferred to this Hospital, but the majority of them came from the Philippine Islands, and the voyage home, together with more cheerful surroundings resulted in a disappearance of the abnormal condition. Most of these cases were of the types of insanity in which the prognosis is good, and most of them were, without doubt, due to nostalgia and the depressing influence of campaigning in the tropics. The diagnoses of these cases were as follows:

Chronic alcoholism.....	2
Epilepsy, grand mal.....	5
Morphiomania.....	2
Epilepsy, petit mal.....	1
Mania, acute.....	2
Melancholia, chronic.....	5
Dementia, syphilitic.....	1
Epilepsy, traumatic.....	1
Melancholia, acute.....	13
Dementia, acute.....	2
Paranoia.....	2
Total.....	36

The following dispositions were made of these cases:

Transferred to Government Hospital for the Insane.....	91
Returned to duty.....	31
Discharged on Surgeon's Certificate of Disability..	10
Died.....	1
Deserted.....	2
Left Hospital.....	5
Discharged on expiration of term of service.....	5
Escaped (General prisoner).....	1
Remaining.....	12
Total	158

The etiology of the cases of insanity handled at this Hospital might be considered unique and is of no little interest. This is so from the fact that these cases come almost uniformly from one class of men, soldiers averaging 20 to 50 years of age, who have been subject to peculiar climatic and sociological conditions. Casually considering these cases from the point of view that the soldier is selected for physical and mental soundness, and that he has become insane under circumstances regarded as highly conducive toward such a condition, one might be inclined to attach undue importance to the influence of outward circumstances as the causative agent. On the other hand, when the length of each man's service in the tropics, the average age and the proportion of insanity for the army in the Philippine Islands, together with other circumstances, are considered, it appears that the tropics, nostalgia and other incidents of the service can have no more than a provoking or precipitating effect.

The average age of the patients received at this Hospital from the Philippine Islands, suffering from insanity, is $28\frac{1}{2}$ years, which is about the age of greatest occurrence of insanity in the male adult. The average length of service of patients who become insane is $2\frac{1}{2}$ years, and the average length of their tropical service is about six months, the former of which is above the average of the same for sick or surgical patients, while the latter is markedly below that for all other patients from the Philippine Islands.

The proportion of insanity in civil life is shown to be about one insane to every 300 individuals, while the proportion for the

Army in the Philippine Islands is found to be about one insane to every 500 soldiers. Furthermore it seems proper to allow here that men in the service are under much closer and more continuous surveillance than would be the same individuals in civil life, and hence the cases of milder mental aberration are here invariably taken account of at once, whereas, in civil life, it is probable many such are never brought to a physician's notice.

In order to further demonstrate that the very great majority of these cases of insanity are more or less degenerates and that their insanity is of hereditary origin, a chart has recently been devised, showing craniometrical and cephalometrical measurements, with any noticeable stigmata of degeneracy, for use in this class of cases.

THE NEW SPANISH FIRST AID PACKET.

As a result of the knowledge acquired in recent wars, remarks Dr. C. I. de Alarcon (*Revista de Sanidad Militar*) the wounds produced by bullets of small calibre may be considered as practically aseptic, and in harmony with the establishment of the principle that asepsis is preferable to antiseptis in the treatment of clean wounds, Spain has adopted a first aid packet which is sterile or aseptic, rather than antiseptic, and in this lead she is followed by Holland.

The new packet as described in official orders, consists of the following :

1st. An outer envelope of impermeable fabric, 12 cm. long and 8 cm. wide. upon which are printed directions. The ends of the packet are rounded. The material is sewn on three sides and the stitching is covered with two coats of rubber varnish.

2nd. An inside envelope of parchment paper.

3rd. Two safety pins, 6 cm. long, wrapped in a bit of waxed paper.

4th. Two compresses, each 10 cm. in length by 7 cm. in width and composed of a piece of absorbent cotton, 5 gm. in weight, between two layers of hydrophilous gauze.

5th. A cotton triangular bandage.

The packets are stored in zinc lined pine boxes, dovetailed, 42 cm. in width by 55 cm. in length, the covers of which are fastened by screws. Each box holds 500 packets.—C. N. BARNEY.

Reprints and Translations.

RECENT SPANISH MILITARY MEDICAL LITERATURE

By LIEUTENANT CHARLES NORTON BARNEY

MEDICAL DEPARTMENT, UNITED STATES ARMY.

OF the 528 pages which constitute Volume XVII of the *Revista de Sanidad Militar*, made up of the 24 semi-monthly numbers issued in 1903, 59 pages (11%) are devoted to circular orders to the Army, on such subjects as the marriage of officers, the uniforms, military orders and decorations, pensions, pay and allowances; 84 pages (16%) are devoted to death notices, the mortality statistics of Madrid, announcements of prize competitions and miscellaneous news items; 227 pages (43%) are occupied by short abstracts and synopses of articles published in the medical press, on subjects not related to military medicine,—for example, “A New Method of Administering Chaulmoogra Oil,” “Primitive Myopathy of the Leyden-Moebius Type,” “Laparotomy in a Case of Tubal Pregnancy,” “The Radiations of Radium,” “Treatment of Syphilis of the Heart,” and “The Chemical Nature of Immunizing Bodies”; 42 pages (8%) are devoted to the 13 abstracts on subjects bearing on military medicine; and 52 pages (10%) are occupied by 7 original articles on non-military subjects, viz.: “Surgery of the Medulla,” “A Case of Burn treated by a New Method,” “Neurasthenia and Psychoses of Nasal Origin,” “Curable Forms of Pulmonary Tuberculosis,” “Hysteria & Aortic Lesions,” “Three Cases of Addison’s Disease,” and “A Case of Fracture of the Skull by the Kick of a Horse.” Out of the 528 pages 64 (12%) are devoted to the 8 original articles on medico-military subjects, viz.: “The New First Aid Packet,” “The Treatment of Syphilis in the Army,” “The Military Hygiene of Dysentery,” “Douche Baths in the Army,” “Advantages and Disadvantages of Compressed Medi-

cines in Field Service," "New Method of Measuring the Depth of Lodged Foreign Bodies by Radioscopy," "Treatment of Wounds in the Various Sanitary Formations during Battle," and "The Baths of Archena in the Treatment of Syphilis in the Army," Several of these articles were presented at the XIV International Medical Congress which was held last year at Madrid.

The "feuilleton" which accompanied the issues from January 1st is a continuation of the article on "Bacteriology in Relation to Hygiene," which began in the issue of October 15, 1902. More recently the subject has been "Notes on Military Hygiene."

THE TREATMENT OF SYPHILIS IN THE ARMY. (*F. G. Del-eilo.*)—Of all the chronic infections syphilis is the only one which is not in itself considered as disabling for service, either permanently or temporarily, the person who is suffering from it. In the Spanish army during the years 1891-98 the average ratio of admission to hospital for syphilis was 11 per 1000, with a minimum of 6 per 1000 in 1891 and a maximum of 23 per 1000 in 1893; and out of the 8463 admissions to hospital for this disease during this period, only 46,—that is, only 5 out of every 1000 cases of syphilis—were declared disabled for further service.

The proper treatment of syphilis requires something more than the routine administration of specifics, and these requirements can not well be fulfilled in army life, either in hospital or in barracks.

In the deceitful security that we can cure syphilis by merely giving, first, mercury, and then, iodide, lies the reason why so many tertiary and para-syphilitic manifestations appear in patients who can scarcely remember ever having suffered from any secondaries. The specific treatment must be prolonged through years, and at the same time the patient must lead a hygienic life, avoiding dissipation and excessive fatigue, and getting plenty of fresh air, sleep, and good food. It is generally conceded that during the first year, no matter how many intermissions may occur in the symptoms, the specific treatment should be carried on for at least seven months out of the twelve, and that during the whole period the patient should be subjected to a strictly hygienic regimen.

It is not practicable nor desirable that the syphilitic soldier should pass his entire period of military service in hospital.

At the same time there are very strong objections to his remaining in barracks. In the first place it is bad for the patient. The life in barracks is not as hygienic as is desirable in the treatment of syphilis, and in barracks it is difficult to see that the patient carries out the treatment ordered for him. In the second place, a syphilitic in barracks is a source of danger to his comrades.

Even an attempt to keep the patient in hospital during the active manifestations of his disease and to send him back to barracks in the intervals is dangerous, for contagious lesions may develop at any time and remain undiscovered for long periods.

Here is a case which shows at once the bad effects upon both the patient and his comrades which may result from allowing a syphilitic to remain with his company. The patient, a corporal, acquired a labial chancre by smoking a pipe which belonged to one of his comrades in barracks, a syphilitic sergeant. At a period when he had no active lesions apparent, and was living in barracks and doing duty, he went out one day with his company to some military exercise, which proved to be arduous, and during which he was soaked and chilled by a sudden storm. The fatigue and exposure were the determining causes of a spinal manifestation of his syphilis, which, beginning as an acute myelitis, passed into a chronic state with paralysis of the lower extremities and of the sphincters.

What has already been said indicates the bad effects which the present methods of dealing with these cases have on the individual, on his comrades, and on the nation.

There are objections also to declaring all syphilitics exempt from service. People have purposely acquired ring worm, and have even cut off their fingers, in order to exempt themselves from military service.

The solution of the problem can not be found in prophylactic measures alone. The application of some, or better, all of the measures of prophylaxis will diminish the number of cases of syphilis, but it will never totally do away with the disease. There will always be syphilitics who will have to be dealt with some way or another.

The least objectionable method would be to declare all syphilitics temporarily disabled but conditionally fit for service, to re-examine them after a period of, say, four years, and at such re-examination declare fit for service those who have been cured, permanently exempt those who have become permanently disabled, and hold over for another four years those who are still suffering from the disease in a curable form. The fact that this would necessarily delay marriage until a late period would, in these syphilitic cases, be of advantage to the nation.

To the enlistment of voluntary substitutes, and to all re-enlistments, syphilis should be an absolute bar.

After preventing the admission of syphilitics to the service the next thing to be done is to try to prevent the acquirement of the disease after enlistment.

Perhaps not very much can be accomplished toward preventing soldiers from acquiring syphilis in sexual intercourse, but something can be done by spreading a knowledge of the dangers of the disease and the means of prophylaxis, by combatting the idea that syphilis is a crime rather than a misfortune, by encouraging men to make known the sources from which they have gotten the disease, and by regulating prostitution. The author reserves this branch of the subject for a later article.

Soldiers should not in any way be punished for acquiring venereal disease, as otherwise they resort to all kinds of devices to conceal the fact that they have syphilis or gonorrhoea, and these concealed and untreated cases spread contagion in barracks as well as outside.

Much can be done to prevent the spread of syphilitic contagion in barracks by searching out the cases at the monthly physical inspections, diagnosing them early, segregating them and treating them.

Treatment of all cases constitutes the most effective method of preventing the spread of this disease.

In this way the syphilitic would be given an opportunity of getting cured, he would fulfill his duty toward his country, he would be in less degree a source of contagion to others, and would practically be prevented from marrying and having children during the existence of his disease.

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**BREVET MAJOR GENERAL JOSEPH K. BARNES,
SURGEON GENERAL, U. S. ARMY, -1864-1882.**

Editorial Expression.

The Surgeon Generals of the United States Army.

XII. BREVET MAJOR GENERAL JOSEPH K. BARNES.
SURGEON GENERAL OF THE UNITED STATES
ARMY.—1864—1882.

CONSEQUENT upon the relief of Surgeon General Hammond from duty in Washington, Colonel Joseph K. Barnes, Medical Inspector General, was assigned to duty in the War Department as Acting Surgeon General and when General Hammond was dismissed Colonel Barnes was promoted to be Surgeon General.

General Barnes was born in Philadelphia, July 21, 1817 and was the son of Hon. Joseph Barnes who for many years served as President Judge of the District Court of that City. The son received his father's name, distinguished by the addition of the initial "K" the initial being complete in itself and not indicative of a second christian name. He was educated at the Round Hill School at Northampton, Mass. and at Harvard University, from the latter of which however he was obliged to withdraw before graduation on account of illness.

He then entered upon the study of medicine under the direction of Surgeon (afterwards Surgeon General) Thomas Harris of the Navy and received his doctorate from the University of Pennsylvania in 1838. He added still farther to his experience by serving for a year as resident physician at Blockley Hospital and for another year as outdoor physician for the northwestern district of Philadelphia.

He then appeared before an Army Examining Board at that time in session in the city and after a most creditable showing was at once appointed and, on June 15, 1840, commissioned as an As-

sistant Surgeon in the Army, and assigned to duty at the West Point Military Academy.

After five months, during which he became fully familiar with the technical functions of a military medical officer, he was, on November 19, 1840, directed to proceed with a detachment of recruits to Florida then the seat of hostilities with the Seminole and Creek Indians. For the next three years he was stationed at Forts Pleasant, Vose, Hamilton, Noel, Stansberry, Poinsett and Brooke and Key West Barracks, much of the time rendering professional services to two or more posts, owing to the scarcity of medical officers, while he saw much field service,—conspicuously on the expedition of General Harney through the Everglades.

After a three years tour of duty at Fort Jessup, La., he joined the Second Dragoons en route to Corpus Christi to form part of the Army of Invasion then organizing on the Mexican Frontier. His service in the Mexican War was active and distinguished, involving all of the operations of Taylor except the battle of Buena Vista, and much of the later movements of Scott's forces. He was present with Worth's command at the siege and capitulation of Vera Cruz and at the affair of the Madeline river he received the special thanks of Colonel Harney. He was Chief Surgeon of the Cavalry Brigade of the Army of Occupation and participated actively in the battles of Cerro Gordo, Contreras, Cherubusco and Molino del Rey, the storming of Chapultepec and the capture of the City of Mexico, contributing most efficiently to the service of the sick and wounded until recalled to the United States in January, 1848.

During the thirteen years which now elapsed before the opening of the War of the Rebellion, Dr. Barnes had a varied and extensive experience in the widely separated portions of the territory which was becoming amalgamated into the United States of America. In the South he served at Baton Rouge and East Pascagoula, La., Fort Croghan and other posts in Texas; in the central west, at Fort Scott, Fort Leavenworth and Camp Centre—now Fort Riley; on the Pacific Coast at San Francisco; and in the north-west at Forts Vancouver and Cascades and as Medical Director of the Department of Oregon; with intervening tours

of duty at Baltimore and Fort McHenry and at Philadelphia and West Point.

When the shelling of Sumter had announced the onset of the great Rebellion officers were called in from all directions and among them Major Barnes was on June 20, 1861, ordered from his post at Fort Vancouver to the Headquarters of the Army, and during the succeeding ten months served successively as Medical Director of General David Hunter's forces, Medical Director of the Western Department, Medical Director of the Department of Kansas and also in the Department of Mississippi under General Fitz Greene Halleck. On May 2, 1862, he was ordered to report to the Surgeon General in Washington and was assigned to duty as attending surgeon in that city.

While in Washington he gained the good will of Secretary Stanton and formed a friendship with that formidable personage which lasted throughout his administration and was productive of vast results both to the Medical Department and to Major Barnes himself. On February 9, 1863, he was appointed Lieutenant Colonel and Medical Inspector and took station in Washington. A few months later, August 10, 1863, he was further advanced to the grade of Medical Inspector General with the rank of Colonel.

A few weeks later, September 3, 1863, when the unfortunate difficulties between the Secretary of War and the Surgeon General of the Army resulted in the forcible detachment of the latter officer from his office, Colonel Barnes was "empowered to take charge of the Bureau of the Medical Department of the Army, and to perform the duties of the Surgeon General during the absence of that officer," and on the following day he assumed the position of Acting Surgeon General and entered upon one of the longest and most eventful administrations in the history of the Medical Department of the Army. On August 22, 1864, his position was confirmed by his appointment as Surgeon General with the rank of Brigadier General, and on March 13, 1865, he was commissioned Brevet Major General, for faithful and meritorious services during the war.

The long and varied experience of General Barnes in all parts of the United States and in three wars well qualified him

for the management of the corps to the head of which he now succeeded. During the remainder of the War of the Rebellion the affairs of the Surgeon General's office were conducted with the highest efficiency and the transition from war to peace was made without a jar.

He selected as his principal assistant, Major Charles Henry Crane, who continued to maintain that relation until the retirement of General Barnes and who then succeeded him in the office of Surgeon General.

The Secretary of War, Mr. Stanton, having a Surgeon General who was personally acceptable to him now became as friendly as he had hitherto been inimical and for the remainder of his term of office he maintained the greatest interest in the health and hygienic condition of the army, omitting nothing that could conduce to the comfort and welfare of the sick and wounded, as well as to the extension of the facilities and opportunities for the work of the officers of the Medical Department.

To this hearty cooperation of the Secretary with General Barnes is due much of the development of the medical work, such as the vesting of the exclusive control of general hospitals and hospital camps in the Medical Department and the ample recognition of the Medical Corps in the bestowal of brevet commissions at the close of the war, the development of the Army Medical Museum and the Library of the Surgeon General's Office, the compilation of the superb Medical and Surgical History of the War of the Rebellion and many other movements which redounded to the advantage of American military medicine.

General Barnes saw that at the end of the Rebellion the Medical Department retained the same proportion of the several grades as during that conflict and strenuously and successfully opposed all efforts to reduce and cripple its work. During the nineteen years of his administration the high standard of the medical officers was maintained and the corps was firmly consolidated by a lofty esprit de corps into the finest military medical organization history had ever known.

He fostered and developed the Army Medical Library, which was expanded by Colonel Billings under his patronage from a

small accumulation of text books to be the most famous medical library in the country and one of the most extensive in the world. The splendid Index-Catalogue was inaugurated during his administration and the work of medical bibliography thereby incalculably advanced. He supported and directed the issue in 1870 and 1875 respectively of exhaustive Reports upon Barracks and Quarters and upon Hygiene in the Army, which were really descriptions of all the army stations in the country with remarks upon the sanitary conditions prevailing, by the medical officers stationed at each post, the whole edited by Colonel Billings.

Immediately upon assuming office he devoted his attention to continuing the collection of material for the Army Medical Museum and the Medical and Surgical History of the War of the Rebellion, issuing numbers of instructions to medical officers and keeping the importance of the work well before them. Four of the six monumental volumes comprising the series, edited by Majors Otis and Woodward, appeared during his administration and the work upon the others was well advanced at the time of his retirement.

During the years of his active medical practice he displayed qualities of the highest type. "He possessed," said General Crane, "quick perception, sound judgment, and a mind fertile in expedients. His unwearying attention and kindly sympathy in the sick-room, won for him the confidence of his patients, which he ever after retained; especially was this the case with the soldiers of the commands with which he had served; in their devotion and remembrance he found his most satisfactory reward."

It fell to his lot to share in the professional care of two murdered presidents. He was summoned to the bedside of the martyred Lincoln and took part in the unavailing efforts put forth to mitigate the effects of the assassin's bullet; and sixteen years later he was called to take part in the treatment of President Garfield and displayed there the same qualities of devotion, skill and interest which had combined to render the professional work of his earlier service so noteworthy.

General Barnes was a man of fine physique and agreeable personality. He possessed to a high degree the art of command-

ing the confidence and regard of those with whom he was brought into contact. These qualities were of the highest service to his corps in connection with the securing of favorable departmental action and advantageous legislation.

He became an honorary member of numerous important foreign learned societies and held many important positions of trust, both public and private.

He was the first Surgeon General of the Army to be retired by reason of age, the compulsory retirement act of June 30, 1882 finding him already nearly a year beyond the age limit and causing his immediate relinquishment of active service.

For months prior to this event however, he had manifested indications of impaired health, which had been accentuated by his protracted and devoted services in the case of President Garfield, and after his relief from the burdens of official responsibility the renal affection which determined his decease became pronounced and resulted in his death at his home in Washington on April 5, 1883.

EXAMINATIONS FOR THE PUBLIC SERVICES.

THERE are a number of vacancies in all three of the national public services and graduates in medicine desiring appointments to these desirable positions should make application by letter to the Surgeon General of the Army, the Surgeon General of the Navy, or the Surgeon General of the Public Health and Marine Hospital Service at Washington, D.C. respectively, for permission to appear before the boards convened in the several services for the examination of candidates. The army medical service inaugurates this year the system described in the JOURNAL some months since, and a number of boards have been detailed at various convenient points throughout the country to conduct the preliminary examinations, successful competitors in which will be entitled to appointment as contract surgeons and to a six months course under salary at the Army Medical School with the probability of a commission in the army upon graduation. The outcome of this plan will be awaited by the profession with much interest.

Current Literature.

THE PREVENTION OF DISEASE IN ARMIES IN THE FIELD.*

IN an attractively written monograph, bearing evidences of wide reading and profound observation, Major Caldwell takes up the subject, in succinct form, of military hygiene. After an attractive introduction, he discusses (1) diseases of the soldier in the field, (2) administrative matters affecting the health of troops in the field, (3) sanitary measures in the field and (4) the sanitary organization of a field force. The consideration of these subjects is made from a directly personal standpoint and the author's extensive experience is evident in every line. He believes that apart altogether from endemic causes certain conditions attendant on field service are potent factors in the production of diseases; that among disease producing factors soil-pollution occupies a prominent place; that although the existence of water-borne enteric fever is beyond doubt, other factors—notably soil-pollution—are of as powerful a nature as the first named in a like direction; that the best means of water purification are not known with certainty; that as so many cases of so called simple continued fever are undoubtedly enteric fever, and as these unrecognized cases are active agents in the spread of the latter disease, means for carrying out the serum diagnosis should be given as wide a field as possible of general applicability; that the prevention of disease in an army in the field resolves itself largely into the question of the disposal of organic refuse; that the spread of epidemic sickness in the field is largely the result of the presence in field hospitals of patients suffering from forms of communicable disease; that with a few common-sense exceptions, the

**The Prevention of Disease in Armies in the Field.* By Major ROBERT CALDWELL, F.R.C.S., R.A.M.C. 12mo; pp. 182 with 28 illustrations. London. Bailliere, Tindall & Cox, 1904.

excreta of patients in field hospitals should be sterilized; that so far as is consistent with military exigencies, autonomy should be granted to the medical service of the army as regards sick transport; that the study of prevention of disease on service consists in the main, of an intelligent comprehension of the various disease-producing factors which affect the soldier in the field; and finally, that although official sanitary regulations are without doubt not only of high value but also absolutely necessary for the maintenance of efficiency, the actual working out of details under the varying conditions of active service must be left to common-sense, an essential part of the mental equipment of the Army Medical Officer. The book is a valuable one and would form with great advantage a part of the equipment of every medical officer, a fact emphasized by the award to it of the Parkes Memorial Prize for 1904.

EPILEPSY AND ITS TREATMENT.*

THIS extensive volume will be a surprise to many practitioners who have not realized the importance at the present day of epilepsy. Dr. Spratling's experience as Superintendent of the Craig Colony for epileptics has to an exceptional degree qualified him for speaking authoritatively upon a subject which has occupied his time and attention for years. The progress derived from recent study of the affection is well brought out, the work being fully up to date. Among the chapters deserving of especial mention are those devoted to the psychologic and medico-legal aspects, while the different types of seizure, the status epilepticus, the forms of epileptic aura and the *sequelæ* are minutely discussed. Treatment receives full and ample consideration in its general and its special medical and surgical aspects, rendering the book a thoroughly well-rounded and complete treatise upon the important subject to which it is devoted.

**Epilepsy and its Treatment.* By WILLIAM P. SPRATLING, M. D., Octavo volume of 522 pages, illustrated. Philadelphia, New York, London. W. B. Saunders & Company, 1904.

INTERNATIONAL CLINICS.*

THE first volume of the fourteenth series of the International Clinics is noteworthy principally for its resume of the progress of medicine in 1903,—the subject of Medicine proper being reviewed by Dr. David L. Edsall, that of Surgery by Dr. Joseph C. Bloodgood, and Treatment by Dr. A. A. Stevens. Among the interesting special articles may be noted two papers upon Neurasthenia by Doctors Robert T. Edes and George W. McCaskey respectively, while Doctors James J. Walsh and Carl Beck write interestingly of the Early Diagnosis of Pulmonary Tuberculosis and of Angioma and Its Treatment. The volume is a good one and deserves well of the profession.

LEUBE'S MEDICAL DIAGNOSIS.†

THE subject of diagnosis is important enough to justify the preparation of numerous works upon the subject. The Diagnostics of Internal Medicine by Dr. Butler was most favorably commented upon in this department when issued. The same publishers now offer to the profession a work upon diagnosis which has been eminently successful in Germany and which will doubtless prove to be of great assistance to the American practitioner in the treatment of the ailments which come before him from time to time. The book is systematically arranged, beginning with diseases of the vascular system, thence proceeding to troubles of the respiratory organs and affections of the other viscera, and, after treating of maladies of the muscles, closing with a consideration of infectious diseases. The book is thorough and comprehensive and what may have been lacking in the German version is added by the editor of the American edition.

**International Clinics*. Fourteenth series, Volume I. Edited by A. O. J. KELLY, M. D. 8vo.; pages 304. Philadelphia; J. B. Lippincott Co., 1904.

†*Medical Diagnosis; Special Diagnosis of Internal Medicine*. By Dr. WILHELM VON LEUBE. American version edited by JULIUS L. SALINGER, M. D. 8vo; pp. 1058 with 5 colored plates and 74 illustrations; New York and London, D. Appleton & Co., 1904.



The St. Louis Meeting.

THE SCIENTIFIC PROGRAM OF THE THIRTEENTH ANNUAL MEETING.

THE St. Louis meeting promises to be the most successful meeting the Association has ever held. The date of the meeting, October 10th to 15th is a most popular one for many other organizations also and the hotel capacity of the city will be taxed to the utmost, so that *members should not delay in securing reservations* for this occasion at the Inside Inn.

The program, as provided by the Arrangements and Literary Committees is as follows :

The Opening Session will convene on October 10th, at 2:00 o'clock P.M., when the following program will be followed :

Invocation - - - - - By *Rev. Leon Robinson, D. D.*
 The State of Missouri. By *Hon. Alexander Monroe Dockery*, Governor of Missouri.

The Louisiana Purchase Exposition. By *Hon. David Rowland Francis* President of the World's Fair.

The Foreign Delegates. By one or more of the representatives of foreign armies.

The Ideal Military Surgeon. Annual Address of the President. By *Medical Director John Cropper Wise*, U. S. Navy.

The music for the opening session will be furnished by the Philippine Constabulary Band of seventy-five pieces.

On Thursday morning, October 11th, at 9 o'clock, the business of the meeting will begin, to be continued upon the succeed-

ing mornings of the week at the same hour by the presentation of the scientific and literary program of which the following is a preliminary outline:

The Relation of the Medical Department to the Health of Armies. By the Enno Sander Prize Essayist.

An abstract of the essay securing first place in the Enno Sander Prize Medal Competition. The competition this year promises to be a very active one and the contest will be participated in by officers of foreign armies as well as of the United States forces.

Further Researches into the Causes which Tend to Bring About Serious Accidents to Divers. By Tenente Colonello Medico Luigi Abbamondi, Royal Italian Navy.

A discussion of the accidents incident to submarine investigation by the representative of the Royal Italian Navy.

The Medical Reserve Corps of the United States Army. By *Major Azel Ames, U.S.V.

The composition of the Medical Staff of the United States Army since 1846. Regular, Volunteer, Militia and Adjunct, the contingent fresh from civil practice always necessarily large and disproportionate. A chief factor of this contingent the Acting Assistant Surgeon. Always of anomalous status his very existence made impossible by the decision of the Judge Advocate General and the attitude of the Secretary of War. Essential to supply his place with a commissioned competently trained officer. Hence to create and train an adequate Corps from the profession in civil life. The defect of the old civil contingent that it lacked knowledge of the special requirements of military service and the sanitary and kindred needs of troops in the field. It could not be competently trained because its personnel was unknown and not to be determined while it lacked commissioned rank and authority—and hence respect. Hence the need of a Corps duly commissioned, and organized from the profession throughout the Union, and made an adjunct of the Army, available on call, maintained at the minimum of expense and the maximum of efficiency, easily mobilized and always under training on the same basis as Medical Officers of the Regular Army and National Guard. To establish the means and standards for this uniform instruction and to keep the military surgery and the Medical Department of the United States Army and its Militia and Adjunct Corps abreast of those of the armies of civilized Europe, a proper Army Medical School, whose existence and cost would be justified by this field of work, the Adjunct or Reserve Medical Corps being instructed and examined by the School by the correspondence methods now so successful in scientific educational institu-

*The asterisk in connection with an officer's name indicates that he is not now in active service as such.

tions. Thus the old unsatisfactory and anomalous position of the "Contract" Surgeon body, swept away. Its place taken by a homogeneous commissioned Corps of competent medical men in civil practice ready to take the field on call or serve as needed in time of peace, viz.: The Medical Reserve Corps of the United States Army. The medical profession in civil practice and its representatives of the Medical Staff of the Army united and in accord, as never heretofore and cordially cooperating. Effective, uniform and competent training through the means of the necessary and much desired Army Medical School to be adequately established and maintained by Congress.

The Principles of the New Austrian Sanitary Regulations for War. By Stabsarzt Dr. Johann Steiner, Austro-Hungarian Army.

A careful review of the sanitary regulations which have just been approved for the medical department of the Austrian Army, by one of the leading officers of that service.

The Use of Trained Dogs in Searching for and Carrying Aid to the Wounded on the Battlefield. By Lieutenant Charles Norton Barney, U.S.A.

Extent to which experiments in the use of dogs for ambulance purposes have been carried in various foreign armies. Practical results of field trials. Methods of training. Methods of breeding. Characteristics of the different breeds of dogs used. Thirty photographs.

The Naval Hospital Ship "Relief." By Surgeon William C. Braisted, U.S.N.

(1.) This paper is intended to give a description of the Naval Hospital Ship "Relief," at present being fitted for service, at Mare Island, California. (2.) Comments on the Ship. (3.) Remarks on Hospital Ship construction.

The Medical Officer in Campaign. By Major P. J. H. Farrell, I.N.G.

Dwelling particularly upon the necessity of the military side of the work of the medical officer, the writer comments upon the need of familiarity with all the hygienic details of camp life and active engagement in executive and administrative duties as well as exercise of medical professional functions.

The Canteen in the Military Service. By *Brigadier General Jefferson Davis Griffith, N.G.Mo.

A discussion of the true position of the canteen in the military service showing the fallacy of the arguments against it and indicating the advantages which it possesses in advancing the morale, the discipline and the contentment of troops.

The Medical Corps of the United States Navy,—Some Details Respecting its Past and Present. By *P. A. Surgeon James Nevins Hyde, U.S.N.

Introduced by a summary of the history of the early stages of the Navy and a brief sketch of the work of Surgeon Ezra Green, discusses the early work of naval surgeons in the post-Revolutionary, War of 1812 and Civil War times, with comments upon the opportunities and facilities afforded to naval medical officers of today.

On the organization and Conduct of the Sanitary Service of the First Line in Modern War. By Colonello medico Pietro Imbriaco, Royal Italian Army.

A discussion of the management of the first line of aid to the injured in battle from an Italian standpoint.

The Sanitary Sergeant. By Brigadier General Otis H. Marion, M.V.M.

The detail is suggested in each military company of an extra sergeant to be known as the "Sanitary Sergeant" and if this be impossible in any case the detail of a sergeant as an "Acting Sanitary Sergeant," to be instructed in and have especial charge of the sanitation of the company and its surroundings. His duties will include the personal hygiene of the enlisted men of his command, the hygiene of quarters, clothing, equipment and food and the conduct of the sick or injured men of the company. In each regiment a school should be held under the direction of a medical officer for the instruction of the sanitary sergeants of the several companies in order to fully qualify them for the work assigned to them.

The United States Naval Medical School. By Medical Director Robert Augustine Marmion, U.S.N.

Importance of a broader education for the naval medical officer than our schools can impart both professionally and from other standpoints. Glance at previous attempts at such instruction which have been made in our science. History of the Naval Medical School and its scope. Schedule of work done here and explanation of its various features and its value in increasing the efficiency of the medical officer in new fields.

The Surgeon of the National Guard. By Major Ralph W. Montelius, N.G.Pa.

The duties, military, professional and social, of the National Guard medical officer with some of the difficulties met with.

The Duties of Medical Officers in the Field. Experience to be Gained at Maneuvers and Encampments. By Captain Frederick P. Reynolds, U.S.A.

(a.) The Knowledge required of Medical Officers in the Field. Army Organization, army administration, field units. Military discipline, com-

mand, rank and precedence of officers and noncommissioned officers, Army Regulations, Customs of the Service. The Field organization and equipment of the Medical Department. The Medical Department on the march, in camp, and during an engagement. Medical Department administration. Hospital Corps administration and instruction. Organization and administration of military hospitals. Sanitary duties. (b.) The Organization and Work of a Camp of Instruction. Arrival in camp. Camp routine. Medical Officers' School. Hospital Corps Instruction. Lectures. The Medical Department in the maneuvers of the day.

Some Features of the Immediate Treatment and Transport of the Wounded in Naval Warfare. By Surgeon Charles Francis Stokes, U.S.N.

Types of wounds. The kind of immediate treatment indicated. Gun's crews to be supplied with packets of a new design and suitable size for the immediate treatment of shell wounds. The Stokes Splint Stretcher and the proper method of using it. Transport of the wounded from fighting ships to hospital ships. A consideration of the extent to which surgical treatment should be carried on fighting ships in the presence of hospital ships.

Medication on the Firing Line. By *Assistant Surgeon William F. Waugh, U.S.N.

Note upon the absence in the equipment of medical and hospital corps of medicinal agents for use upon the firing line. Suggestion as to the substitution of agents effective in small quantities such as glonoin, atropin, strychnine, morphine, etc., in the field equipment with comments upon their applicability.

An Hour with Dr. Thomas Trotter, Physician to the Fleet. By Medical Director John C. Wise, U.S.N.

Extracts from an Address of the late J. M. Browne, Surgeon General U.S.N. Important service rendered to the English fleet which won such imperishable renown for Great Britain. Views greatly in advance of others of his day. His great knowledge of nautical disease. The value of his work "Medicina Nautica." His indefatigable industry, and high administrative capacity. Introduces many improvements in the medical discipline of the Navy. Versatility as a writer. Tribute to the character of the British seaman. His work in connection with the eradication of Scurvy and Typhus. Advanced views concerning the hygienic and dietetic management of nautical maladies. "Medicine the hand-maid of the art of war." Efforts at reformation of Royal Hospitals.

James Markham Marshall Ambler, U.S.N. By Medical Director John C. Wise, U.S.N.

Illustrious and distinguished ancestry. Education of a Virginia boy. Later studies at Washington and Lee. Medical education. Enters naval service as an assistant surgeon in 1874. Service in the West Indies. Vol-

unteers for the Jeannette Arctic expedition. Life on the Jeannette during an Arctic winter. Zealous performance of duty. Studies in the causes of disease and morphology of snow-crystals. Medical Officer and Road-Master combined in the historic journey by sled and boat to the Lena Delta. The high esteem in which he was held by brother officers and his commander. His splendid physique, great urbanity and cheerfulness of manner. Devotion to duty attested by Medical Journals kept and carried over hundreds of miles of ice (Now preserved in the Navy Department). His sublime courage and christianity as exhibited in letters to his brother, written just before the last scene on the Lena Delta.

Army Medical Officers who have Become Secretaries of War.
By *Major James Evelyn Pilcher, U.S.V.

(1.) William Eustis, Surgeon of the Massachusetts Artillery Regiment in the Revolutionary War, Hospital Surgeon Continental Army 1776-1780, Hospital Physician and Surgeon 1780-1783, Surgeon of Regiment of Militia 1787, Surgeon to the forces employed to suppress Shays' Rebellion, Secretary of War 1807-1813. (2.) James McHenry, Assistant Surgeon Continental Army, 1776, Surgeon Continental Army 1777, aide-de-camp and private secretary to George Washington, aide-de-camp to Marquis de LaFayette, Secretary of War 1796-1801.

A Sanitary Study of Culebra, U.S.W.I., as a Naval Base.
By Medical Inspector Howard E. Ames, U.S.N.

The causes and necessities for a Naval base. Requirements of a Naval base from a military standpoint and the fulfillment of these requirements by Culebra. Requirements of a base from the medical standpoint and the importance of these requirements as shown by history. Examination of Culebra's healthfulness. The climate, soil, animal and vegetable life, and food supply. The water supply and chemical analysis of the water. The prevailing diseases, and preventable diseases. The varieties of mosquitoes and their breeding places. The inhabitants of Culebra. Means of producing perfect hygienic conditions from the standpoint of camps, hospitals, etc. The application of Sanitary laws in care and drill of fighting force. Collateral requirements for health and comfort.

Camp Sanitation. By Major Herbert A. Arnold, N.G. Pa.
Subject old but ever new. Object of this paper being to impress rather than interest. Ideal camp site. Water supply. Ration and care of. Latrines. Garbage disposal. Policing. Tent sanitation. Personal cleanliness Corps, team drivers and civilians require watching. Frequent medical inspection. Change of camp site when contagion or infectious disease, or soil pollution are manifested.

An Improved Method of Standardizing the Recruit. By Surgeon Henry G. Beyer, U.S.N.

The significance of the physical examination in the selection of recruits

and its bearing upon the efficiency of the service. On account of the intimate correlation shown to exist between the physique of a boy and his mental qualifications, method is suggested by which the records of the measurements may be kept in such a form that they will at once show the physical rank of the recruit in its relation to all the rest of the recruits.

Practical Hearing Tests. By *Major William Sohler Bryant, U.S.V.

Inadequacy, inexactness, unreliability and injustice of the methods of testing hearing in common use in physical examinations. Needed: the sound of the human voice having a known intensity. Such a mechanism is found in the modern phonograph, when fitted with a sound proof box, a graduated stop cock, and a three way valve. Such an apparatus allows the exact determination of the ability of the applicant to understand the human voice, and also the absolute efficiency of each ear separately, independent of mental bias.

Malingering. By Lieutenant Samuel M. DeLoffre, U.S.A.

Reports five cases of Malingering observed in the Post Hospital at Fort Assiniboine, comprising cases of simulated (1) injuries to the forearm, (2) sprain of the knee, (3) lumbar and cervical muscular rheumatism, (4) ophthalmic disease, and (5) insanity.

The Effect of College Athletic games on Body, Mind and Character,—Especially as Observed at the U.S. Military Academy, West Point, N.Y. By Colonel Valery Havard, U.S.A.

Exercise is necessary for all young men but should be graded and adapted to individual needs. Athletic games are only for the few, violent and intermittent, therefore not a desirable form of physical exercise. They consume time and energy which could be more profitably devoted to mental training. On the other hand, they develop certain qualities of character valuable to all but especially to military officers, and, therefore, to be commended at West Point and Annapolis; there, the advantages clearly outweigh the objections. General considerations on the physical and mental characteristics of West Point athletes. Possible injurious effects of athletics on heart and lungs in after-life.

The Epidemic of Pneumonia. By Surgeon Charles Edward Banks, P.H. & M.H.S.

Statistical relation of Pneumonia and Tuberculosis, past and present, with comparisons of the increasing prevalence of former and the gradual decrease of the latter. The growth of pneumonia in our large cities of late years and the type of it as seen in Chicago. Its great mortality percentage and undoubted contagious character. Clinical description of typical case. Unsatisfactory results from all forms of treatment. Slow convalescence of those who recover. Need of combined effort to develop a successful curative agency.

Altitude and Expansion. By Surgeon Paul M. Carrington, P.H. & M.H.S.

A practical note of believed value in determining question of what climate to advise for consumptives. Meaning of altitude in this article. Expansion: Significance of. Reasons why expansion should guide in determining proper altitude for a consumptive patient. Statistics supporting the contention.

The Common House Fly as a Factor in the Spread of Tuberculosis. By Surgeon J. O. Cobb, P.H. & M.H.S.

Stating briefly the reasons for believing that tuberculosis, commonly, contracted through the intestinal tract. Describing the method by which the lungs can be infected, via., the intestinal tract. If the infection is through the intestinal tract what is the medium? Is it milk? Or is the fly the principal factor in planting bacilli upon food? Briefly referring to the habits of the fly and relating some experiments showing that it carries various bacilli in its stomach and deposits them in its dejecta. Pointing out the many ways the fly could infect food.

Pulmonary Tuberculosis, its Diagnosis and Course under Favorable Climatic Conditions. By *Dr. Edward D. Sinks, U.S.A.

A discussion of the climatic treatment of tuberculosis with illustrative cases and an account of the accessory treatment required.

The Dangers of Unrestricted Traveling of Consumptives. By Assistant Surgeon John W. Trask, P.H. & M.H.S.

(1.) The great number of those afflicted with pulmonary tuberculosis who travel, especially in the southwest. (2.) Their ignorance concerning proper care of sputum. (3.) Pullman, sleeping and other cars necessarily hot beds of infection under present conditions. (4.) Cities and towns of the southwest as well as railroad coaches a constant danger to the traveling public. (5.) Proper remedies.

Fracture of the Radical Head. By Surgeon Charles Edward Banks, P.H. & M.H.S.

Report of a case of fracture of head of radius, from indirect violence with skiagraphs, before and after treatment of the injured parts.

Report of Surgical Cases. By Captain James Brew, N.G. Tenn.

Comprises reports of two cases: (1.) Adams-Stokes disease, occurring in connection with acute articular rheumatism preceded by an attack of influenza. (2.) Obstruction of the bowel, due to bands of adhesions, accompanied with general peritonitis, following facial erysipelas.

Report of a Case of Acute Rheumatic Fever as Treated by John O'Connor, M.A., M.D., by His Surgical Treatment for Acute

Articular Rheumatism. By P. A. Surgeon J. Benjamin Dennis, U.S.N.

Report on D. H., coal passer (U.S.S. Detroit). Case of Acute Rheumatic Fever of Joints, as treated by John O'Connor, A.M., M.D., by his surgical treatment for acute articular rheumatism; with comments and references.

X-Ray in Military Surgery. By Lieutenant Harry Hall Hartung, M.V.M.

X-Ray Photographs. Possibly portable X-ray outfit such as is used for military purposes together with reports of the use of the X-ray in the Spanish-American, Boer, and Russo-Japanese Wars.

A Case of Perforating Gunshot Wound of the Stomach, Operation, Recovery. By *Dr. Charles B. Mittelstaedt, U.S.A.

November 1899, while on duty at Imus, Luzon, P. I., a Filipino girl was carried into the field hospital at that place. The field hospital was located in a room of the Convent adjoining the church and was supplied with the usual regimental field outfit. The patient exhibited two gunshot openings on abdominal surface. Preparations for operation. Laparotomy under anesthetic. Suture of two openings found in the stomach and subsequent treatment. Under ordinary circumstances, a soldier with a similar wound would have received temporary dressing, and been sent on to the Brigade Hospital at Bacoar, four to five miles distant, for further treatment.

Removal of Bullets Lodged in the Spheno-Maxillary Fossa. By *P. A. Surgeon Lewis Stephen Pilcher, U.S.N.

(1.) Difficulties in locating bullets lodged in the deeper recesses of the framework of the skull. Value of x-ray as an aid in such localization: Technical difficulties in reaching and removing such deeply lodged bullets even after accurate localization has been effected. (2.) Special relations of the spheno-maxillary fossa. History of recent case of gunshot wound of the face with lodgment of the bullet in that space. Fruitless effort to reach bullet by enlarging wound of entrance. Experience of author in exposing and removing the third branch of the trifacial nerve as far as the foramen ovale by elevation of the ramus of the lower jaw after dividing the body of the bone at its junction with the ramus and cutting across the inferior pterygoid muscle; application of this method in present case; complete success. (3.) Critique upon this route for gaining access to the spheno-maxillary fossa in various surgical conditions.

The Operation for Radical Cure of Congenital Inguinal Hernia. By P. A. Surgeon A. C. Smith, P.H. & M.H.S.

Congenital hernia described. The infeasibility of separating the sac from the cord in many cases of this form of hernia makes the operation for cure one of special difficulty and importance. Method given for overcoming

the difficulty and closing the neck of the sac without injuring the cord. Notes of four cases operated upon in the adult.

The Treatment of Abdominal Injuries with Special Reference to Gunshot Wounds of the Liver. By *Colonel J. E. Summers, Jr., Neb. N.G.

All wounds of the abdomen which raise the suspicion of the injury of a hollow viscus demand immediate operation. All wounds of the kidney or spleen should be operated by an appropriate technique. Most cases of gunshot wound of the liver are more safely treated by refraining from operation. Exceptional instances being those probably involving the gall bladder or ducts and knife wounds near the free border. The technique of operative treatment of wounds of the liver.

Gunshot Wounds of the Ureter—Two Cases of Uretero-Vesical Anastomosis. By Assistant Surgeon General George Tully Vaughan, P.H. & M.H.S.

Extreme rarity of gunshot wounds of the ureter compared with other wounds of this structure. Two cases of uretero-vesical anastomosis one for gunshot wound of the ureter received six months before, the other for injury to the ureter in removing the rectum for cancer. In both cases the proximal end of the ureter was grafted into the bladder, the end split and sewed to the bladder from within, through an opening in the front wall of the bladder.

Tetany and Foreign Bodies in the Stomach. By Captain James P. Warbasse, N.G.N.Y.

Up to the present time, the literature contains reports of eight cases of gastric tetany coming under surgical treatment. Five of these cases were cured; three died. The mortality among cases treated medically is 80%. The disease has always been associated with dilatation of the stomach, due usually to stenosis of the pylorus. Of the theories advanced to explain these peculiar nervous phenomena of gastric origin none is altogether satisfactory. The most acceptable view is that the disease has to do with the absorption of the products of fermentation in a stomach which is not able to empty itself. The spasms are excited by the mechanical irritation incident to the resisting pylorus. Usually after an effort at vomiting the patient falls unconscious in a convulsive attack. The character of these convulsions resembles both tetanus and epilepsy. Often there is a preliminary numbness of the hands. The muscles of the hands and forearms become tense. The tetanic spasm extends to the muscles of the back, neck, face, and lower extremities, and may be described as a series of tonic contractions. In the intervals between convulsions the patient may regain consciousness. Case operated upon at the German Hospital in Brooklyn.

Remarks on the Clinical Aspects of Cavite Fever. By Medical Director Remus Charles Persons, U.S.N.

General consideration. Clinical history. Etiology. Treatment.

First Aid in Naval Warfare. By Medical Director John C. Wise, U.S.N.

A critique of lately published views on this, subject by English, French and Spanish writers. Preliminary consideration. Location of dressing stations. The contention that they should be a permanent feature in modern naval construction considered as most inadvisable. The stations and duties of the Medical Department during an engagement. The French idea that it should be under cover and practically non-active during an engagement, not well conceived either from the humane or utilitarian standpoint. Emergency dressing. In view of the nature of the service, when men are isolated, or performing duty in inaccessible localities, the importance of individual instruction in first-aid greatly enhanced in the navy.

The Need and Advantages of a Permanent International Congress of Military Surgeons. By Colonel Nicholas Senn, Surgeon General of Illinois.

(1.) The advantage to the service of the sick and wounded of a uniform method of medical assistance. (2.) The necessity under modern conditions of cooperation in aid to the disabled of the medical departments of both sides in active hostilities. (3.) The greater efficiency of service secured by mutual acquaintance among military medical officers of various nations. (4.) The peculiar usefulness of discussion and contact in professional convention. (5.) The desirability of securing this result by the institution of a periodically recurring International Congress of Military Surgeons.

The following papers, abstracts of which have not yet been received, will also be presented:

The Field Hospital for Use with Cavalry. By Lieutenant John Ryan Devereux, U.S.A.

The Sanitary Situation in Panania. By Colonel William Crawford Gorgas, U.S.A.

Tetanus. By Dr. Vernon MacCammon, U.S.A.

Experiences in the Late Venezuelan Troubles. By Surgeon J. C. Pryor, U.S.N.

Beri-Beri. By Medical Director John W. Ross, U.S.N.

Original Memoirs.

MILITARY MEDICAL CONDITIONS RELATING TO THE AMERICAN LEGATION GUARD IN PEKIN, CHINA.

BY CAPTAIN FREDERICK M. HARTSOCK.

ASSISTANT SURGEON IN THE UNITED STATES ARMY.

THE statement may appear paradoxical that north China is one of the healthiest spots on the globe when I follow with a description of the varied diseases encountered in this region, but it will be seen that from the utter lack of hygiene on the part of the inhabitants the hearty northern Chinese flourish above the dirt and filth as does the lotus above the black mud of their ponds.

The terrain and climate is all favorable and I think that even with the present sanitary system of the towns, if infectious cases were isolated, the morbidity record would be as low or lower than most of our eastern cities in the United States.

During a twelvemonth in Peking, I was struck by the small sick rate among the foreign residents. This population, including the diplomatic and military forces of the various nations, about a hundred missionaries, and a small number of persons engaged in trade enterprises, numbering in all not more than 3500, only produced about four cases of enteric fever in the year. Considering the utter lack of hygiene on the part of the natives and the surroundings in which were placed these foreign residents, this is a remarkable record. I should not exactly recommend Peking as a health resort but the finely built ruddy cheeked Chinese seen and the healthy, well-nourished appearance of the foreign residents attest the geniality and stimulating influence of the climate.

As Pekin lies in the same latitude as Philadelphia, we might expect about the same climate and with the exceptions I shall name the similiarity is evident. The winters are rarely severe the average temperature during the month of January would be about 20°F. to 25°F. although occasionally there are days when the thermometer may touch zero. The winters are short and begin and end in a gorgeous late Autumn and a comfortable early Spring. The Autumn season is ideal and is only marred by an occasional dust storm which will be presently described. The summers are short but hot, and the months of July and August are quite like those of our eastern states excepting the thermometer rarely registers 100 degrees. The spring of the year opens in March and an agreeable three or four months may be anticipated. In the province of Chili, the rainy weather is only met with in June and July, during which time drenching showers are frequent, and the other period of the year may not see a drop of moisture, excepting light snows which come in December and January. Rarely does it snow over four inches and this lies but a few days, being carried off either by high winds or melting before an intervening warm day. But in the winter the ground for the most part is solid and the disagreeable slushy periods of our eastern winters are seldom encountered. The number of days of sunshine is what makes the climate so agreeable for the most months of the year; a few cloudy days in the winter and during the summer, showers,—and the rest is like California. To the great number of days of sunshine and the out of door life which most of the inhabitants can lead, may be attributed their good health.

High winds are frequent in the months of February and March and during this period may be expected the dust storms which are one of the most disagreeable features in this section of the country. These phenomena appear generally without any following rain or snow and in a very short time the atmosphere is filled with a yellow dust which reaches such an intensity that at the height of the storm it is difficult to see more than ten paces ahead. The dust pervades all things and

is not without a deleterious influence on the health. The storms are said to arise in the desert of Gobi from whence the fine pulverous material is carried for hundreds of miles reaching over the northern provinces and into Manchuria and extending to the sea coast. The incidence of dust storms is parallel with the development of numerous cases of pneumonia and tonsillitis. Fortunately the wind is not high for more than twenty-four hours at a time, but the two mentioned months may be counted disagreeable for about half the period.

A glance at the map will show the capital situated in the midst of a great plain, the most northern city of any size, and near the northern range of mountains known as the Khun-tu-Shan. It will be seen also that the flat territory of which I speak is continuous from the coast over into the province of Shan-si, and northward only to the great ranges which separate it from Mongolia and southward beyond the Yellow river. The great Chinese wall practically includes all of this territory within its bounds.

The city of Peking is about thirty-five miles from the nearest mountains on the north and was purposely placed under the lee of these protecting ranges because of their sheltering influence.

It will be noted likewise that the area is well interspersed with rivers and a traveler into the interior will note the frequency with which small streams are encountered, facilitating the growth of vegetation and providing water during the great drouths that are liable to occur in this region.

If systems of irrigation were devised, the frequent famines due to crop failures would be unheard of, but that fatal quality in the Chinese of lack of public spirit permits none of this.

Drinking water may be found at any place in or around the city of Peking at a depth of from twenty to twenty-five feet. The wells yield abundantly though for manufacturing purposes the artesian water would have to be depended upon. A depth of 500 feet gives fine artesian water and without the

hardness characteristic of surface wells. The ordinary surface water is quite impregnated with earthy salts, and from this undoubtedly originates the many cases of vesical calculi encountered.

The city of Pekin is somewhat ahead of the smaller towns of north China in the way of sanitation inasmuch as in the original transformation of the city in the eleventh century when the capital was moved from Nankin to the present place, there were embodied in the plans some crude ideas of sanitation, and remnants of the work last to this day.

Before describing the conditions about Pekin, it is well to say a word or two about the smaller towns. All villages are laid out with due regard to the points of the compass; north and south, east and west are invariably the directions of the roads, streets, and files of buildings,—the north face of each building being bare of windows and the doors of the houses protected by a brick ante-door some three feet in advance of the main entrance. The houses are made of the adobe brick and with the better classes stuccoed. Invariably one story they are set well apart and there is little harm from over-crowding. Houses are arranged generally in sets; four separate houses facing a court compose one residence, the various separate buildings being used for living rooms, sleeping apartments, and stables respectively. Generally a small brick structure is built in one of the enclosures serving as a closet for the excretions deposited on the ground. In most cases there is little chance of soil contamination from this source as the material is collected in buckets each day by coolies who make this a business, utilizing the excreta after its fermentation for fertilizing vegetables and plants. The Chinese houses are in themselves fairly well adapted to the climate and are well ventilated. The façade is generally an open grill work covered with Chinese paper allowing easy exit and ingress to air without draft. The Chinese however suffer somewhat from the effects of coal gas poisoning in spite of the well ventilated houses. It is the custom to heat the houses by means of portable brasiers in which is burned "coal balls" that is,

coal prepared by pulverizing and mixing with equal parts of clay and made into balls about the size of an English walnut. As there are no chimneys in the houses the gases arising from these brasiers soon fill the rooms and the ill effects from their use is especially noticeable in the early spring when thousands of cases of chronic carbon monoxide poisoning are to be seen on the streets, and during the winter months many deaths occur from gas asphyxiation. The chronic cases are marked by the peculiar pallor and puffed appearance of the face appearing not unlike that seen in chlorosis.

No beds are in use as with us; a raised structure extending across the room, about seven feet deep and two high, built of bricks, serves a whole family as a place to rest, small mats rendering its surface soft and comfortable. The floors of these houses are almost invariably of stone and generally unswept.

The water supply of a village of several hundred inhabitants may be dependent upon two or three public wells, everybody dipping into the same source and not the least care being taken to prevent contamination through bad drainage.

The average north Chinaman is fond of an out door life and their houses are provided for warm weather as well as cold by plenty of doors and windows.

The clothing worn by the natives consists in the summer of light cotton material and in the winter of like stuff except that the coat and trousers are quilted and wadded with cotton batting. A greatcoat is generally an addition in winter, the lining ranging from sheepskin to sable according to the rank and wealth of the wearer. The Chinaman thus does not suffer in either winter or summer from the extremes of climate and most Europeans agree that the clothing worn by the Chinese is sensible both as to cut and material and well adapted to conditions.

The food supply of the natives differs little from that of our country, the principal meat used being mutton, but beef and pork are used in quantities. Corn, barley, buckwheat, millet and wheat meals are supplementary to the rice diet and

and three bowls of rice three times a day with a little pickle constitute the day's rations. Under this diet the heaviest work is done and apparently ample protection is received from cold. Milk products are not used except among the Mongols of the north and the only fat used comes from the pig. In the winter the coolie diet is supplied with some millet or corn.

The struggle for existence in China for centuries has produced a race very resistant to disease; over-crowding, poverty, and occasional famine has weeded out the unfit and a people is the result which in body and temperament will most certainly show their strength when they come to live on the same level in competition with the white races.

When disease overtakes the unfortunate celestial he resigns himself to fate. He has little faith in his crude *materia medica* in cases of severe illness and knows that from the state or municipality there will come no aid in the shape of medical attendance. In the larger cities at present there will be found numerous hospitals, generally under the management of missionaries who carry on their spiritual work in conjunction with medicine. For the few Chinese who dare cast aside their prejudices and superstitions these asylums furnish adequate aid and supplemented with a dispensary service are productive of a small percentage of benefit. Little, however can be done in the way of prophylactic medicine and the most simple methods are employed.

From Canton to Peking are hundreds of medical missionaries who are doing a good work, acting as the entering wedge of civilization to be followed I think in near years by decided improvement in the health conditions of the Chinese cities.

In the city of Peking there are the following institutions devoted to medical missionary work and providing the best of attention to those who desire treatment, gratis:

The Peitang, an institution founded by the Jesuit fathers in the 17th century as a religious settlement and in late years supplemented by a hospital and school both for the exclusive use of the Chinese. The hospital covers three acres of ground

and was rebuilt only one year ago. It has accommodations for one hundred and sixty free patients besides several private wards. The hospital is built on the pavilion plan, one storied, and the wards are contained in eight separate buildings of mixed Chinese and European architecture arranged in Chinese fashion with court yards. Ample floor and air space is provided in the wards but the old Chinese system of heating is still adhered to. The beds are built out from the wall as before described and mats are used in place of linen on which to lie. The hospital has a dispensary serving also as an operating room but only minor cases are operated on here; this hospital being in connection with another to be described in which all facilities are at hand. All classes of cases are treated here, most however being acute infectious diseases for which ample provision is made for isolation.

The second to be mentioned, instituted in the city within the year from indemnity funds received from the Chinese government, is known as the International Hospital, being entirely under the jurisdiction of the aforementioned religious institution, attended by the sisters of mercy and under the medical management of several French army surgeons. The hospital built of brick and composed of a simple structure with wings at right angles at each end has a fine modern operating room, laboratory, and forty-six private rooms as well as an isolation ward of six private rooms and in addition a large dispensary and pharmacy. Both Europeans and Chinese are treated in this institution; only the more serious medical or capital surgical cases being accepted. The hospital is located opposite the American Legation Guard in the Legation city and is beautifully surrounded by a small landscape garden. The work done in this hospital is excellent and very creditable.

Under the jurisdiction of the London mission there are two compounds of Chinese houses utilized as hospitals and dispensaries, one located in the Tartar city and the other in the Chinese city. The cases treated in these institutions during a year average more than ten thousand, including dispensary

cases. Major operative work is performed when extreme necessity demands.

Connected with the Methodist mission there has been recently opened in the Legation city a small but thoroughly equipped and modern hospital with accommodations for about fifty cases. In conjunction is a well equipped dispensary. The future of this institution is very good, all the gentlemen connected with the medical work speaking Chinese and through this medium may be expected good results in the propagation of ideas of hygiene and sanitation.

Besides the foregoing named institutions each nationality has connected with its Legation guard a hospital adapted to the size of the command.

The German Legation Guard consists of a command of 250 men and about ten officers and for this number is provided a hospital of thirty beds. The building at present is the regulation canvas frame transportable house and is not at all suited to the climate of Peking. A permanent brick structure is in course of building. The equipment is simple but well selected. An operating room is improvised from a section of the quarter and the surgical outfit is all that can be desired for aseptic work. In connection is a laboratory for microscopic work and an x-ray apparatus. This latter has never been satisfactory and is useless at present having been operated with storage batteries. In addition to the hospital is provided a field outfit consisting of two ambulances and a transport wagon. The hospital is managed by a surgeon with the rank of Captain and an assistant with Lieutenant's rank. The hospital attendants are taken from the line after a year's service and after qualifying in marksmanship. They are transferred then to the corps where they remain throughout their service. They are instructed in hospital work for four months previous to transfer and after entrance receive litter drill once a month.

The French garrison are only provided with a dispensary in their compound. Sick cases are detained in this dispensary for three days or until a diagnosis is made and thence transfer-

red to the above mentioned French hospital which is run in conjunction with the military organization. One Major, surgeon, performs this duty and there are only six attendants for a garrison of 250 men. No field equipment is provided except a small pack hamper, the principal field material being at the main station at Tien-Tsin where there is a garrison of one regiment and a battery of artillery.

The Austrian Guard has a neat little hospital of eight beds, the building being of brick and one story but well adapted for the work. The equipment is very meager consisting of a few cases of instruments and dressings and a Lietz field microscope.

The Italian Guard has a well constructed one-storied building in its compound and contains sixteen beds. The building is constructed after the style of Italian houses, with a central part utilized as a ward and sundry small rooms for operating room, attendants, lavatory, etc. The equipment is meager and ill-selected; capital operation could hardly be thought of in this institution.

The Japanese have a building set apart for their hospital which includes infirmary, and surgeons' and attendants' quarters. The equipment is rather light but all that is necessary for ordinary work. An operating room and laboratory are provided. The field equipment is excellent, in fact the best I have seen; contained in pack hampers it includes all necessary instruments, dressings, bedding and food. No transportation is provided and it appears that reliance will be placed on coolies to carry the small but complete outfit. The instruments, drugs, dressings, and even the blankets are made in Japan and are with few exceptions quite as good as those of European countries. Two surgeons attend the guard of 280 men and seven officers. They are both Captains and are exceedingly well informed being graduates of the University of Tokyo.

The Russian military hospital is adjacent to the barracks in the same compound, is constructed of brick on the plan of all Russian houses, is one-storied, and with walls about

28 inches thick. The heating is done by means of Russian stoves built in the walls with connecting flues leading all through these structures permitting the heat to circulate completely around the rooms warming the house by radiation from the walls. The windows are double with no provision for ventilation. The number of beds is variable but I am told that space is provided for twenty beds. The air and floor space is inadequate and the ventilation is nil. The dispensary, drug room, and operating room is one; a few dirty bottles of medicine and an old field case with a few dressings constitute the equipment. The hospital attendants are the most ignorant of individuals. The limit of their knowledge seems to rest with taking temperature and ladling out the food. Very little system prevails and no records are kept except a few small books for notes and names of patients with diagnosis. A Surgeon-Lieutenant has the organization in charge. During one of my visits to this hospital I saw a case of empyema of the pleura which had been neglected until it became evident even to a layman that the patient was suffering from fluid in the thoracic cavity. The surgeon inserted a trocar and withdrew about a gallon of pleuritic fluid into a dishpan which had been provided for the purpose and left the case without any dressing other than a small piece of cotton stuck over the wound.

The British have not yet erected their new quarters and are at present occupying the old Chinese buildings which were on the ground recently given over by the Chinese government. The hospital is located in one set of four buildings nearest the American Legation Guard. The houses are fairly well adapted for temporary use, the air and floor space being more than adequate. The equipment is very good and all exceedingly practical, adapted to the needs of 200 men and nine officers. The microscopical, surgical, and medical outfits are designed for any class of work. The transportation of wounded in the field is dependent on Hindoo bearers with dhoolies and ambulances. These latter are two-wheeled vehicles of Indian pattern drawn by two mules whose harness comprise the qual-

ities of pack-saddles as well as for draft work. These wagons accommodate two patients recumbent or four sitting. The hospital attendants are divided into two classes, white and the Indian, the former attends the wards work and the latter the policing and bearer duties. A Captain, surgeon, and an Indian assistant surgeon attend the guard, the hospital being a field hospital unit and of the Indian army.

The American Guard is better provided in every way than those of the foregoing named nations. Our barracks and hospital are simple in construction but adapted to the locality and needs of the force. The hospital built of brick is two-storied, roofed with galvanized iron, and contains eight rooms besides a kitchen and dining room. Two large glass covered verandas facing the south are well suited to the needs of the convalescent patients besides allowing the sun to penetrate well into all parts of the building. The entrance faces south and purposely no windows open to the north from which the cold blasts of winter come. Two rooms to the left of the entrance are used for dispensary and operating room; these, being on the first floor, are easily accessible, and with the remaining rooms on the opposite side as medical and surgical wards, the whole work is easily carried on on the lower floor. The upper rooms are used by the hospital corps with one room set aside as an isolation ward. The wards accommodate easily nine patients but with the room up stairs in use the number can be raised to twelve. Our equipment is second to none. The dispensary is the most systematic and well-arranged in Peking. The operating room is provided with all material necessary for major and minor work. During my service at this station I performed a number of major operations as well as a large amount of minor work and did not get in any instance but the best of results. The facilities for asepsis were perfect and I had not the least fear of opening the abdomen knowing that the sterilization could be depended on as well as the assistance of the corps. Likewise there was no lack of material for clinical investigation and especially microscopical work. Our ration and the forty cent allowance

provided a diet for patients that could not be approached by any other nationality. For field service the detachment would have found nothing lacking, although the medical and surgical chests were of the old pattern,—this was the only single drawback. The tentage, bedding, transportation and ambulance were all immediately available.

To sum up, I could see by minute inspection of the equipment of each nationality in Pekin that we had nothing to learn from them; that our equipment and system was absolutely the best.

The sick rates of the Legation Guards remained about the same throughout; a close watch was ever kept on the native population for the advent of an infectious disease. The medical officers of the various guards as well as those connected directly with the legations were organized into an association with a committee delegated to facilitate information as to the health conditions of the town, and a definite reciprocity in the health status of the guards was carried on.

Each nationality looks after its own sanitary arrangements. There is no common system as to water supply or disposal of waste and sewerage. The pail system is generally in vogue, Chinese scavengers being employed for the purpose and the waste material is carried well beyond the Tartar city to be utilized as fertilizer.

The new Legation buildings in process of construction have for the most part arranged to use the old Chinese sewers which drain into the moat outside the Tartar city. The proximity of this canal to the legation section is in my opinion unsafe if the procedure is carried out. The danger from flies, soil contamination, and infected vegetables washed in this water would be a serious matter to the foreign section should an epidemic of cholera or enteric fever appear.

The water supply is for the most part from the surface wells in the various Legation compounds. The water is hard but uncontaminated; however several guards namely the French, Russian, German, and American have taken the precaution to provide distilling plants which furnish sufficient

water for drinking and culinary use. No case of disease has in my time been traced to the wells in the guard compounds, although the wells adjacent in the Chinese section are notoriously bad.

The health of the various commands is excellent. It is especially noted that soldiers sent from the various stations in southern Asia and the Philippine Islands rapidly improve in health and gain in weight and color on coming to Peking.

Most Americans sent from the Philippines develop malaria soon after arrival, the cold serving to bring out the latent organisms, but after treatment for a fortnight with quinine, the trouble disappears, not to return, and invariably the patients gain in weight from ten to thirty pounds afterwards. I am told the same is noted with the French who come from Indo-China and the British from Hong-Kong and other tropical possessions.

The habits of the men depend largely on the nationality. I am sorry to say that, although the Americans preserve most excellent discipline, drunkenness is more prevalent among them than the other nationalities. Possibly this is due to the lack of the Canteen system with us. The British have a well-established post exchange, where light beer is sold and in connection, a club room, which tends to keep the soldier in barracks and preserve sobriety. The French give a ration of wine; likewise the Italians and Austrians. The Japanese sell beer and saké in their compound, but never have a case of drunkenness. The Germans have a home-like rathskeller, where beer and German foods are sold, and their drunkenness is nil. The Russians have no post exchange, as the soldier only gets about 20 cents a month and therefore has little to spend in liquor; but often these soldiers convive with other nationalities and there is likely to be drunkenness if the liquor is attainable. The American soldier, however, is forced to the low grogeries and dives, dozens of which exist on the outskirts of the legation quarter, and the result is he either imbibes an extra quantity of alcoholics to last until he reaches the barracks, or buys cheap whiskey in bottles and secretes it for

use in the garrison. The American soldier is the most sought after, as he has far more pay to spend than the other nationalities, and the result is the extra tendency to fall into the hands of these brothel- and saloon-keepers, who especially cater to encourage this trade. I believe this accounts for the extra large venereal rate among our soldiers.

Having given some idea of the country, surroundings and people with which our soldiers are forced to live, a better conception will be gained when I speak of the most prevalent diseases in this locality and their influence upon the residents, both native and foreign. I will describe the most commonly prevalent ailments under their separate heads and their reference to the morbidity rate of our small command in Pekin. Notwithstanding the unhygienic surroundings, the sick rate is very low. The percentage in hospital averages about the same with all nationalities. From two to five per cent are generally in hospital; those in quarters can hardly be counted as it is the custom to take all soldiers indisposed into the hospital, the sick rate being so small and the hospital accommodations so ample. One-half of the cases in hospital are venereal. So this would leave a very narrow margin for other cases. An inspection of the total guard hospitals in Pekin only showed in the month of September last fifteen venereal cases, three malaria, two typhoid fever and a few minor infirmities.

Without regard to classification of the diseases in their pathological order, I shall begin with the infectious and contagious maladies, which are of most interest to the foreigner, from the point of prophylaxis.

Typhoid fever.—Every practitioner who makes a stay in Pekin notes the rarity of typhoid in the resident population, and each offers his explanation on various hypotheses. It would appear at first that the general conditions in north China were well conducive to the spread of typhoid,—the soil contamination, water supply from surface wells, numerous water-courses and their frequency of contamination, and the use of food easily infected by bad water. These factors cer-

tainly are favorable, but it will be seen that there are others directly to the contrary, and upon these I base the comparative rarity of this affection. The frequency with which it is encountered is hard to estimate; no good statistics are at hand, and in fact, there are no figures except the few kept by the various local hospitals, which are no basis on which to get the relative morbidity. I have been informed by practitioners who deal largely with the Chinese, that enteric is rarely seen and when it occurs the cases are rather mild in degree. The Peitang Hospital could not give any figures for the reason that the new medical section was open but a short time and no Widal was tried on the fever cases. However, from several visits to this institution I would estimate that about two percent of their medical cases were typhoid. There were recorded on the field register of the American troops which reached Peking on the expedition of 1900, thirteen cases of typhoid, probably infected elsewhere. In 1901 there were two cases in the guard and in 1902 there was but one during the year. In 1903 there were no cases until October, when five appeared at one time, with one death. In the British legation guard for 1903 there were two cases in 380 persons. The Germans had one case in 1903.

There are several factors accounting for the small rate of enteric, the principal ones being: non-use of dairy products made in the country (the Chinese do not use milk in any form, and the foreign population depend on conserved products); the alkaline soil; the great number of days of sunshine throughout the year; the depositing of waste matter on the surface, where it is rapidly disintegrated and sterilized by the sun's rays; and the use of cooked food and tea by the native population.

Malaria.—This infection is not infrequent at present in north China, along the Peiho River, and I am informed that it has appeared only since invasion by the foreign troops in 1900. It is very probable that the cases were introduced by the British, American and French troops who were sent from notoriously malarial sections, and that the difference in types which I shall describe, can be traced to the transfer from Tien-

Tsin to Peking during the siege. As to the types, I can speak from some experience and observation with our soldiers. Malaria has frequently appeared in our guard, the majority of cases being latent from the Philippines; in fact it is the rule for a soldier transferred from Manila to Peking to develop malaria within two months. At least one-third of the troops show this infection. However I have noted cases in soldiers who have never served in the Philippines and who have come direct from non-malarial regions in the United States. Several of these with tertian infection first brought this to my notice and later, in the native population, I had an opportunity to demonstrate the presence of this variety. In Peking I have seen only the benign tertian form, but I am told that from Taku to Tien-Tsin numerous cases of the aestivo-autumnal infection have developed; this from the French surgeons who have given some little attention to this subject. Possibly the absence of the malignant type in Peking is accounted for by the development of this infection in the troops during the battle of Tien-Tsin and their detention at Tien-Tsin Hospitals until cured, the benign cases being more resistant and not developing fully until their arrival at Peking. All yield readily to the acid solution of quinine and two months is generally sufficient to eradicate completely the Philippine infection.

Dysentery.—A form of dysentery is seen in Peking during the rainy season, which corresponds to the Shiga infection of the Philippines, excepting that the types are not as severe.

During the campaign in China in 1900 our troops showed quite a rate for dysentery for about a month, but after this fewer cases were noted. These first were old infections from the Philippines, undoubtedly. That amoebic dysentery is not present in North China I firmly believe. The Germans claim numerous cases of amoebic dysentery just after the campaign, upon their arrival, and numerous abscesses of the liver, but these certainly were not infected in China. Probably if they did have true amoebic dysentery, the infection came from drinking water from one of the various tropical ports touched en route. I have examined repeatedly for amoeba in dysen-

tery cases, both in foreigners and natives in Pekin, but never have encountered anything of this character. In the German cases the abscesses of the liver may have been due to enteric infection or embolism through the portal system in dysenteries due to pyogenic organisms; certainly no tropical abscesses could have been contracted in North China.

Smallpox has been known in China since the beginning of history, as well as a form of vaccination, designed for its prevention. The frequency with which pockmarked natives are encountered shows the great danger foreigners run in visiting this section unprotected by vaccination. That the disease is regarded lightly by the orientals may be judged when I state that I have seen a baby in the pustular stage of smallpox, being carried in the arms of its mother about the streets. The disease is generally contracted in infancy by the natives and it has been the custom to practice a form of vaccination by inoculating the infants in the mucous membrane of the nose from the pustules in a fully developed case. That unprotected foreigners develop smallpox readily in China goes without saying and the cases are always grave. During my stay at Pekin I noted five deaths in foreigners from this cause. The native population is awakening to the good results of vaccination and it is very frequently practiced. In the American section of Pekin for 1903 two cases developed in foreigners, one in a legation clerk, vaccinated in infancy, and the other in a soldier who had been repeatedly vaccinated, without result. Both cases were of a modified type and recovered.

Pneumonia.—Acute lobar pneumonia is very prevalent among both the native and foreign population. Predisposing to its development is the filth-laden dust, high winds, and cold of the winter. The cases differ in no wise from those seen at home. In the American guard there were two cases during the winter of 1902-3. Numerous cases were reported from the various other guards during the same period. I treated several pneumonias in natives at this time and though they had little nursing, or care, they progressed as well as the Europeans.

Diphtheria.—While this affection does not often appear in adults, its presence in Pekin is sufficiently frequent to note. It yearly causes the death of thousands of children. As there are no pharmacies selling antitoxine in the city, the supply must always be kept on hand by the practitioner. The French hospital was the only place that possessed it during my service. A supply of at least 12,000 units should be on hand at our hospital in Pekin and replenished twice yearly. There were no cases during the year 1902-3 in our troops.

Tuberculosis.—Possibly as strong an argument against the bovine theory of transmission of this disease may be derived from the examples seen in North China. No milk products are used, yet the disease is exceedingly frequent in the native population. The causes are over-crowding, expectoration on the floors of the houses, insufficient nourishment. The pulmonary form predominates, yet joint and glandular lesions are seen in numbers. The cases do not appear to do well under treatment, though the climate be exceedingly dry and bracing. The disease is well recognized by the Chinese, and its inevitable end is understood. Upon discovery of the nature of his illness the oriental takes to the use of opium and the malady is of short duration.

Cholera.—Epidemics of cholera have appeared in north China at intervals of three to five years. The source of infection is tropical China and India following the trade routes. This infection is almost always present in Canton, and occasionally assumes the proportion of an epidemic. Bombay and Calcutta spread the infection by ships to the Straits Settlements and thence the disease travels northward along the coast towns of China. While Hong-Kong is an excellently governed town and great care is given to the prevention of infectious and contagious diseases, the great amount of trade does not permit of strict quarantine and this port is largely responsible for the transmission of infectious diseases from the tropics to northern Asia. The Philippine epidemic of 1902 originated from infected vegetables brought from Hong-Kong to Manila these having been grown near Canton and

fertilized after the Chinese custom. During this time cholera was epidemic in mild form in Canton, and all of the principal cities on the Chinese coast were in turn infected. Shanghai had a severe epidemic in the months of May, June, and July in the year of 1902. The native population principally suffered but many deaths occurred in the foreign concession as well. When the writer visited Shanghai in September 1902 the epidemic had ceased but for a few sporadic cases, though the shipping was occasionally molested. At the height of the epidemic few vessels of either the northern or the southern trade escaped without a few cases, and in some instances the crews were decimated. At this time the cholera had spread to Japan entering almost simultaneously at Nagasaki and Yokohama. Here the epidemic ceased in 1903, the last cases occurring in Nagasaki in November.

Cholera had been introduced into north China in the spring of 1901 probably through Shanghai through the medium of Chinese coolies. The disease quickly evidenced itself in Manchuria extending up into Mongolia and even into Siberia killing thousands.

Pekin did not suffer until the summer of 1902 when a few cases developed in Tien-Tsin and Peking simultaneously. Strange to say, the disease did not get a strong foot-hold in this latter city. The presence of cholera was noted by frequent deaths among the native population and the coffin shops for a few months did some business but estimates by foreign practitioners from the latter source place the number of deaths below a few thousand. In the Legation section there appeared two cases, one in the Japanese Legation in a servant, and the other in the German guard. Both died. Extra precautions were taken to prevent infection and the result of course was excellent.

The American guard was unmolested and had, in fact, little to fear as the soldiers were careful to observe fixed rules with regard to food and drink.

The epidemic ceased in August in the province of Chili and since then there has been no recurrence.

There is little fear from this source in time of peace. The garrisons can be easily protected. But in event of invasion of China by foreign armies, extra precaution in the way of quarantine would have to be observed, against Shanghai and all ports south.

Bubonic Plague.—Certainly the Chinese must have selected the region of Peking for a capital with regard to its immunity from invasion by infectious and contagious diseases.

Plague has raged in Canton at intervals for years, has existed in Hong-Kong from time to time in epidemic form, and even extended to Shanghai and thence northward to the port of New Chwang. Peking has as far as I can learn never had a case. Plague appeared in the port of New Chwang three years ago according to the report of the Chief of Imperial Chinese Customs, Sir Robert Hart, and has existed in epidemic form since. The disease has extended to numerous small towns along the Chinese Eastern railway and downward along the coast to the Peiho river, never approaching Peking nearer than a small town of six thousand inhabitants located on a branch of the Tien-Tsin railway called Peitang.

In the spring of 1903 reports were received by the consulates, of the presence of a disease in Peitang which was accompanied by fever, swelling of the glands, and with a very high mortality. The Japanese sent a surgeon to investigate the nature of this infection and found it to be true plague proven by bacteriological examination. The report received from the Japanese legation later gave a record of eighteen hundred deaths from this source for three months, February, March and April.

Syphilis.—This disease is especially prevalent and was known in China before the Christian era. Mercury has been used in its treatment as far back as the history of Chinese medicine dates. All forms of this affection may be seen in the clinics from the earliest eruption to the old osseous lesion. Hereditary cases are met with in extraordinary frequency. The Chinese not distinguishing between this and many other skin diseases of like appearance, have a common name for all

and do not appear to know the disease can be transmitted from mother to child.

A practitioner who has treated a large number of cases of syphilis in the Chinese informs me that it yields quite as readily to treatment as with the European. While the Chinese practitioners use mercury in the form of a red sulphide and iodide they do not give prolonged treatment, the drug being administered in very large single doses salivating the individual at once. When symptoms disappear the treatment is discontinued and resumed upon reappearance.

The soldiers of the foreign guards have an extraordinary high rate of this disease. It is difficult to get at exact statistics as the surgeons are reluctant to state facts, but I have been able to approximate sufficiently for an opinion. The Japanese have few cases. The Austrians, Germans, and Italians, must have about from ten to fifteen per cent of their men affected. The British state that they have rarely a case. This I do not credit. Possibly five per cent would cover it. The French have a high rate, possibly equal to ours. The Russians have a rather low rate, but I noticed that the Russian Army surgeon kept a stock solution of Hydrarg. Salicylate on hand for hypo use, and some cases must exist. The Americans, I am sorry to say, have a very high rate. During the period from October, 1902, to October 1903, I treated thirty-five cases in the guard. These cases were kept under careful observation the while and treated for six months with hypos of gray oil after the method of Lang, of Vienna, and later with mixed treatment. All responded to the treatment. No cases did badly except one which developed nephritis, and died. The disease was contracted exclusively from the Chinese and Japanese and I am unable to see the difference between the severity of the Asiatic infection and European. In fact, I was struck by the comparative mildness of the disease, as after six weeks generally there was not a symptom except in a few cases which developed iritis or throat lesions.

Specific Urethritis.—About ten per cent of the soldiers were infected all the time with gonococcus infection. Treat-

ment consisted of alkalies and bromides for two weeks, later ol. santali. About five weeks was the average duration, apparently uninfluenced by drugs.

Contagious Eye Diseases exist in shocking proportion among the Chinese, the principal affections being acute purulent conjunctivitis and ulcer of the cornea. The causes are several,—dust and winds, flies, and the habit of the native barbers of scooping under the eye-lids for the purpose of cleanliness. The cases of conjunctivitis respond readily to protargol, one per cent instillations, and the corneal troubles to the yellow oxide of mercury.

Skin Diseases due to filth come to the clinics in numbers,—all forms of mycotic dermatitis, ecthyma, impetigo, contagious, and parasitic. Pastes of arsenic and cinnabar are largely used by the natives in these cases with success. The former substance is used also as a dusting powder in infected wounds.

There are three other affections seen with sufficient frequency to especially note. These are:

Goitre.—This is especially prevalent in north China and is seen even in Mongolia. Its presence cannot be accounted for by any of the theories. It is chiefly seen in women, very rarely in children. I estimated that from seven to ten per cent of women had more or less thyroid enlargement. The disease is rarely seen in men and is not confined to the native population. I saw two cases in European women long resident in north China. The parenchymatous type is most general, though some cases are cystic. The Chinese use for the treatment of goitre pastes of red iodide of mercury with some success.

Vesical Calculus.—Stone in the bladder is a common disease in China and is ascribed to the extreme hardness of the water. Practitioners among the natives operate frequently for this affection. It is especially prone to develop in eunuchs on account of the contraction of the urethra after the operation of castration.

Echinococcus Cyst.—This is mentioned because the tinea echinococcus is not described as occurring in China in any of

the books I have so far consulted. I have seen three cases of hydatid of the liver in Chinese one of which had undergone spontaneous cure by ulceration through the abdominal walls. The cases all gave a history of having existed for about a year and a half. I am told that this condition is rarely encountered.

In summing up this paper I wish to emphasize the benignity of the climate of north China and the excellent conditions under which troops could be placed in case of campaign in this region. Should our forces again have cause to participate in hostilities here in large bodies I believe that with our present system in the medical department we could successfully cope with any emergency that might arise and a sudden or prolonged campaign would not find us wanting.

DEATHS IN BATTLE DURING THE LAST CENTURY.

THE genial and learned Professor of Physiology in the Faculty of Medicine in Paris, Professor C. Richet, once wrote a novel and made a forecast of the probable condition of the world a hundred years hence. An ardent lover of peace on earth and an eloquent apostle and advocate of the doctrine of good-will among men, Professor Richet has been "looking back" over the past century and reckoning the death toll due to wars during the enlightened nineteenth century. He estimates the grand total to be about 14,000,000, made up as follows: Napoleonic wars, 8,000,000; Crimean wars, 300,000; Italian war, 300,000; American Civil war, 500,000; Franco-German war, 800,000; Russo-Turkish war, 400,000; civil wars in South America, 500,000; various colonial expeditions in India, Mexico, Tonquin, South Africa, etc., 3,000,000. If to these who died on the "stricken field" we add the number of "broken" disabled soldiers, the widows and children who suffered, we have indeed a huge budget of slaughter, a record of Christian activity, that almost makes one despair. The new century seems to have started as if it intended to maintain the record.—*British Medical Journal*.

OBSERVATIONS ON MALTA FEVER IN THE UNITED STATES ARMY.*†

By LIEUTENANT CHARLES F. CRAIG.

ASSISTANT SURGEON IN THE UNITED STATES ARMY; PATHOLOGIST TO THE UNITED STATES GENERAL HOSPITAL AT THE PRESIDIO OF SAN FRANCISCO, CALIFORNIA.

DURING the year 1901-1902, fourteen tests were made in the Presidio General Hospital for Malta Fever by the agglutination reaction, of which four were positive. On account of the interest pertaining to the occurrence of this disease in the United States Army, I reported these cases fully in the annual report of the hospital for that year together with the literature of the subject. The report was as follows:

Medical Officers of the British army were the first to draw attention to a disease prevailing in Malta and other Mediterranean stations possessing many of the symptoms of typhoid but differing from that disease in important respects.

In 1816 Burnett¹ described very fully this disease, but regarded it as being a remittent malarial fever. This view of the character of the fever was adhered to for many years, and it was not until 1878 that the distinction was clearly drawn by Medical Officers of England between remittent malarial fever and Malta fever.

When first described the disease was supposed to be peculiar to the Island of Malta, hence the name Malta Fever; but continued observation has proven that it is a widespread disease

*Extract from the Report of the U.S.A. General Hospital, Presidio of San Francisco, California, for the fiscal year ending June 30, 1902. By Colonel Alfred C. Girard, Assistant Surgeon General, U.S. Army.

†Since writing the above report I have observed three additional cases of Malta fever at this hospital, one of which was diagnosed as typhoid and the other two as remittent malarial fever. These cases all presented acute symptoms and resembled in all important particulars those which are here reported. June 1, 1904.

¹Burnett: Practical Account of the Mediterranean Fever, London, 1816.

throughout tropical and subtropical regions. Thus Donaldson² described cases in Gibraltar, Tomaselli in Sicily, Patterson in Constantinople, Oliver³ along the banks of the Danube, Veale⁴ in Cyprus, Musser⁵ and Cox⁶, in Porto Rico, Chamberlain⁷, Curry⁸, and Strong⁹ in the Philippines.

Many and various were the opinions held by observers as to the etiologic factor in the production of Malta fever, and it was not until the painstaking researches of Bruce were published in 1887 that anything positive was known as to the etiology. Bruce¹⁰ demonstrated the cause of the disease to be a micrococcus to which he gave the name "Micrococcus Melitensis." His researches threw a flood of light upon the etiology and pathology of this hitherto obscure disease.

I shall not enter here into any detailed description of the pathology or symptomatology of Malta Fever, save to say that it is generally a fever of long duration, subject to frequent relapses, presenting a most irregular and confusing temperature course and accompanied by severe pain in the joints, constipation, profuse perspiration, and often followed by arthritic pains, with or without swelling of the joints. An enlarged and tender spleen is very common. Diagnosis of the disease has heretofore presented many difficulties, as it resembles in many instances typhoid or remittent malarial fever; and even with the help of the microscopical examination of the blood and the Widal test, the distinction between these diseases cannot always be made. In 1897, however, Wright, of the Royal Army Medical School, England, discovered that the blood serum of a patient suffering from Malta fever will agglutinate the micrococcus melitensis in very dilute solution,

²Donaldson: Army Statistical Reports, 1839.

³Oliver on Danubian Fever. *Lancet*, Vol. II, 1892, p. 1359.

⁴Veale: Report on Cases of Fever from Cyprus, Malta and Gibraltar. *Army Medical Department Reports*, England, 1879.

⁵Musser: *Philadelphia Medical Journal* December, 1898.

⁶Cox: Report of Surgeon General, U.S.A., 1899, p. 285.

⁷Chamberlain: Report of Surgeon General, U.S.A., 1900, p. 226.

⁸Curry: Report of Surgeon General, U.S.A., 1900, p. 226; also *Journal of Medical Research*, Vol. VI, No. 1, July, 1901, pp. 241-248.

⁹Strong: Report of the Surgeon General, U.S.A., 1900, p. 227.

¹⁰Note on discussion of microorganisms in Malta fever, *Practitioner*, Vol. XXXIV, p. 161. Also observations on Malta Fever, *British Medical Journal*, May 18, 1889.

and this agglutination test is most delicate and can be depended upon absolutely in diagnosis. I will give in detail later the method of performing the test.

DESCRIPTION OF CASES.

At the U.S. Army General Hospital, Presidio of San Francisco, California, the blood of every patient admitted is examined microscopically, by order of Colonel Girard, the Commanding Officer. Unless specially requested by the attending surgeon, the Widal test and the agglutination test for Malta fever are not performed, so that it is possible, and indeed probable, that cases of Malta fever may have passed through the Hospital without being discovered. By the courtesy of Professor Welch, Johns Hopkins University, and Professor Ophüls, Cooper Medical College, San Francisco, I have been supplied with cultures of the micrococcus melitensis, and these have been used in making the agglutination tests in the cases about to be reported.

From December 1st, 1901 to date (June 24, 1902), four cases of Malta fever have come under my observation at this Hospital; two during acute exacerbations of the disease, and two during the chronic stage.

CASE 1. Two attacks of Malta fever, the first complicated by combined estivo-autumnal and tertian malaria.

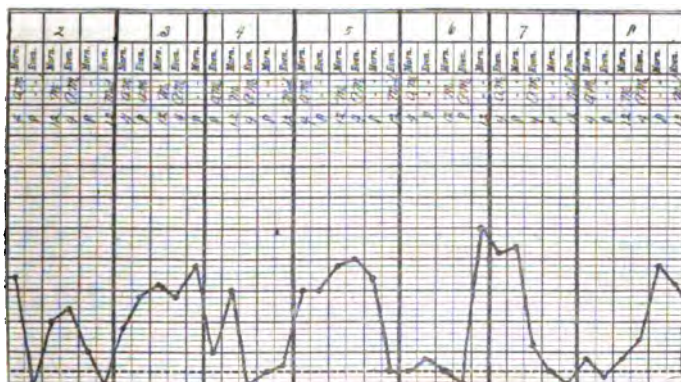
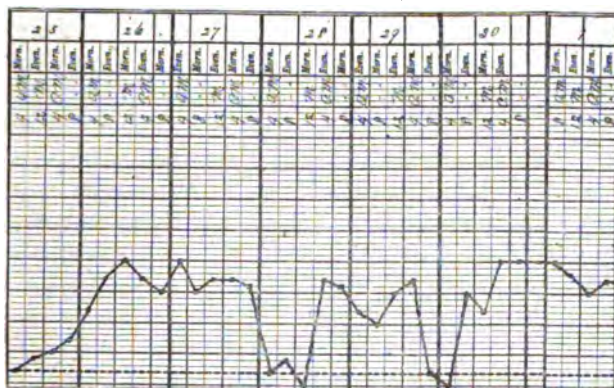
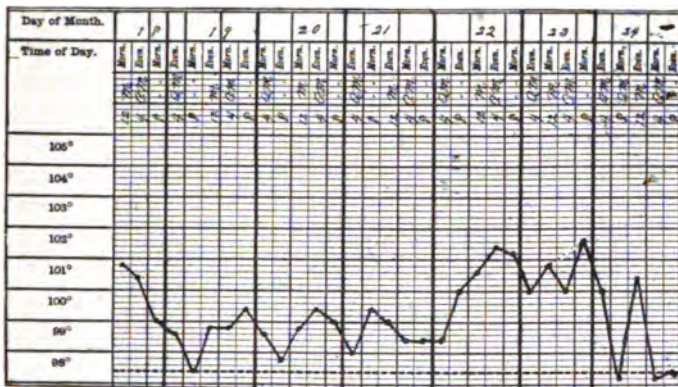
This case occurred in the person of an Assistant in my Laboratory who had suffered repeatedly from attacks of malarial fever and was under the medical care of Dr. Edmund Barry, to whom I am indebted for the data.

History of the Case before Admission:—Gustav T. W. Schmidt, Private, Hospital Corps. Age 28 years. Birthplace, Germany. Enlisted in the U.S. Army April 7, 1898, in New York City. He arrived in New York City from Europe in 1891, and had never been sick prior to enlistment. After enlistment was immediately ordered to Tybee Island, Ga., where he joined Battery "F", 5th U.S. Artillery. He left Tybee Island with the Battery April 23, 1898, and was next stationed at Chickamauga Park, Ga., where he remained one week, at the end of which time he went to Port Tampa, Florida, and about July 1st arrived at Santiago de Cuba. He had not been sick up to this time. After the surrender of Santi-

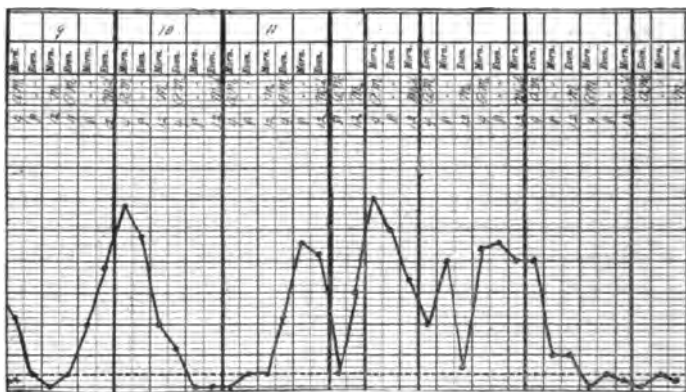
ago he camped until about August 15th, 1898, near El Caney, and while in this camp often had slight chills followed by a rise of temperature, and was treated with quinine. Before embarking for the United States he was stationed for one week in the city of Santiago, doing guard duty in the streets, where he had to sleep. He left, August 23d, for the United States, and went on sick report the next day, the physician diagnosing the fever from which he was then suffering as typhoid. On September 1st he arrived at Montauk Point, Long Island, where he stayed for five days, when he was transferred to St. Catherine's Hospital, Brooklyn, N. Y. Here he improved rapidly, and about September 16, 1898, was taken as a convalescent to Shepley Hall, Atlantic Highlands, N. J., through the kindness of Miss Helen Gould. About October 4, 1898 he was granted a furlough for one month to visit Brooklyn, N. Y. The next day he was seized with a severe chill followed by high temperature and sent by ambulance to the Methodist Episcopal Hospital, Brooklyn, where he stayed for two weeks, after which he was transferred to St. Catherine's Hospital. At this Hospital his case was diagnosed as typhoid malaria. About December 4, 1898, he reported for duty with his Battery at Fort Hamilton, N. Y., where he stayed until March 31, 1899. During this time he had several attacks of malaria, having chills followed by fever, nausea and vomiting, pains in all the bones and severe headache. On April 1st, 1899, he left New York for Manila, by way of San Francisco, and was well until July of that year, when he had slight chills at San Pedro, Macati, P. I. He also suffered from attacks during August, 1899. During January, 1900, at Bacour, P. I., he had fever and chills, with severe pains in all the joints, repeatedly. He was then transferred to Manila, and while on duty at the Medical Supply Depot in that city he had several attacks of fever, with pain in all the joints, severe headache and high temperature. In November, 1900, he was ordered to the United States, his case being diagnosed as malarial cachexia, although he had never had an examination of the blood. From November, 1900, until September, 1901, he had several chills, followed by rise of temperature, with pain in all the bones and in the lumbar region. At this time I discovered numerous estivo-autumnal parasites in the blood.

History of First Attack, Complicated by Malaria: On Sept. 4, 1901, patient had a chill and was admitted to Hospital. At this time an examination of the blood showed a few nearly full-grown tertian parasites, and numerous estivo-autumnal parasites. Patient appeared in fairly good condition although somewhat anemic. Presented a coated tongue and complained of constipation, severe headache and backache. Physical signs, negative. The case at this time was supposed to be one of malarial fever, and quinine was given in large doses. The temperature at this time did not go above 102°, and the treatment with quinine brought it down to normal in a few days and the patient was returned to duty. On the 18th of September patient had another chill and was again put upon sick report. An examination of the blood at this time showed a few estivo-autumnal parasites, and treatment with quinine was resumed. Patient complained of the same symptoms as of the previous attack, but mostly of severe pains in the joints. An examination of the blood was made every day, and the estivo-autumnal parasites disappeared by the 21st, but the patient continued to run an irregular temperature. This irregularity continued, as will be seen by reference to the thermograph until Oct. 13, during which time no malarial parasites could be demonstrated in the blood, and an examination was asked for as to the possible occurrence of Malta fever. This examination was unsatisfactory, because of the fact that my culture of the micrococcus melitensis had become infected and it was impossible to secure a new one. It was noticed, however, that a partial agglutination was obtained, and from the history of the second attack I have no hesitancy in asserting that this continuation of the temperature after heroic doses of quinine was due to the presence of Malta fever. On reference to the chart it will be seen that the temperature shows a marked quotidian character, there being a daily rise and fall, much resembling that found in many cases of tuberculosis. The highest point reached at any time was 104° F., but most of the time the temperature did not go above 102°.

The patient gradually convalesced and was discharged from the Hospital on October 19, after a week's normal temperature.



Thermograph of Cases of Tertian Estivo-Autumnal Malarial and Malta Fever.
Private Gustav T. W. Schmidt, Hospital Corps, U.S. Army.



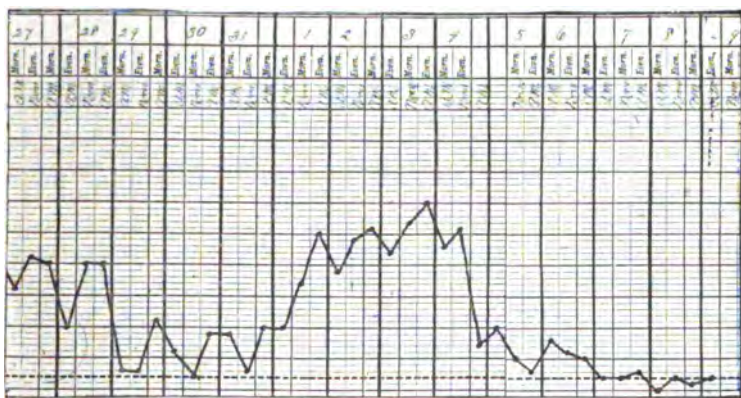
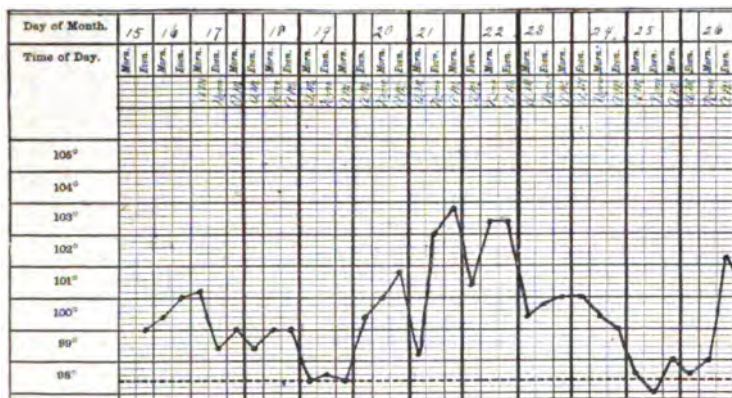
Thermograph of Case of Tertian Estivo-Autumnal Malarial and Malta Fever
Private Gustav T. W. Schmidt, Hospital Corps, U.S. Army.—Continued.

The symptoms complained of during the time in which the malarial parasites were absent from the blood were those of pains in the joints and feeling of marked malaise and considerable frontal headache. Patient appeared anemic, the skin of a yellowish hue, and he became considerably emaciated. At this time he also suffered from a slight nephritis, as shown by the examination of the urine.

There can be no doubt, I believe, that this attack was due to Malta fever, but was complicated at its commencement by malarial fever, which soon succumbed to the influence of quinine but which in no way affected the course of the Malta fever.

History of Second Attack: From October 19th to December 15th the patient remained comparatively well, although he complained at times of slight headache and chilly sensations, together with some pain, especially noticeable in the articulations. On the 15th of December he had a slight chill and was re-admitted to the Hospital with a temperature of 100° . An examination of his blood for ten consecutive days showed no evidence of malarial infection, but from the previous history of the case it was supposed that the temperature at this time was due to malaria, and large doses of quinine were administered. A request was not made for the Malta fever reaction until the 18th of January,

at which time the temperature had reached normal. At this time the reaction was positive at once in a dilution as high as 1 to 250. This reaction was repeated several times and was always found positive, and immediately cleared up the doubt which had attended the case from the commencement of the first attack.



Thermograph of Second Attack of Malta Fever in Case of Private Gustav T. W. Schmidt, Hospital Corps, U. S. Army.

The symptoms complained of during the second attack were similar to those of the first, there being marked pains in the joints, considerable headache and furred tongue and a markedly

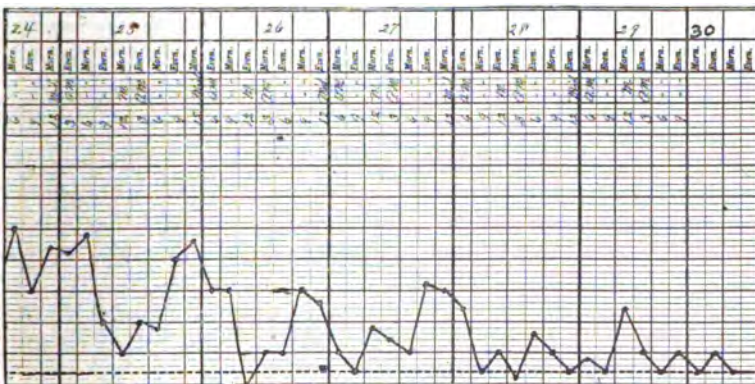
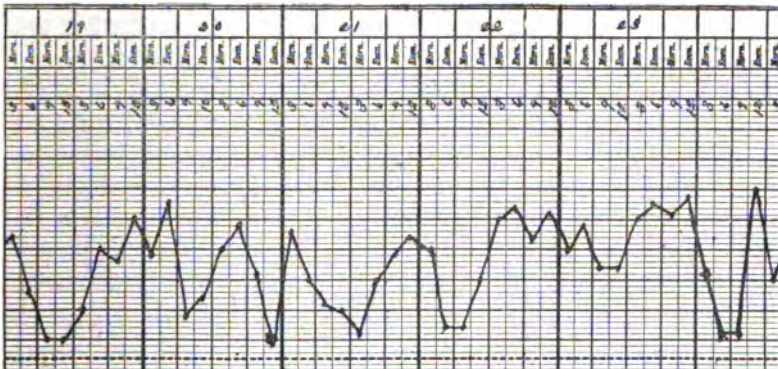
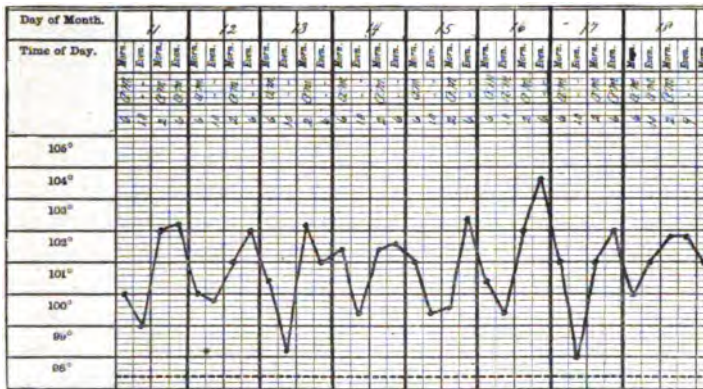
anemic countenance. From a consideration of the thermograph of the second attack it will be seen that the temperature during this attack differed markedly from that of the first. During the first attack the temperature was markedly quotidian in character, while during the second the temperature stayed above normal for from five to seven days.

These two charts illustrate remarkably well the irregularities of the temperature in Malta fever during different attacks of the disease, and of how comparatively little value the temperature chart is in these cases. During the second attack the patient had no signs of nephritis, and this attack was not as severe or as long continued as the first. Patient was discharged from the Hospital on the 19th January, 1902, having had a normal temperature for two weeks. Since that time there has been no repetition of the attacks but he has complained considerably of stiffness in the joints and slight chilly sensations.

There can be no doubt but what this infection was contracted prior to the patient's arrival at this Hospital, as he gives a distinct history of similar attacks in the Philippines, which were considered, however, of malarial character, the blood never being examined. The occurrence of malaria together with the first attack further obscured the case, and led naturally to the inference that these attacks of fever were in fact due to malarial infection. This case shows the importance of blood examination and use of the agglutination test for Malta fever in the obscure fevers which are prevalent in the orient.

CASE 2. C. H. M., Musician, Co. D, 27th Infantry. Age 23 years. American.

History Previous to Admission: Patient gave but little history previous to admission, save that of suffering from malaria in the Philippines. He had several attacks of slight chills followed by fever, general pains and severe headache while campaigning, and was diagnosed as a case of malarial cachexia. He was on sick report four or five days before admission to this Hospital, at the Presidio complaining of pains in the left hypochondriac region.



**Thermograph of a Case of Malta Fever in Musician Charles S. Mills,
Co. D, 27th Infantry.**

History after Admission: On admission patient complained of severe pains in the lumbar muscles, tenderness upon pressure over the spleen, and headache. There was considerable cough present. Bowels constipated, and there were some mucous rales heard at the base of the right lung. The patient had an irregular temperature previous to admission, and on January 7th had a distinct chill, the temperature reaching 103°. An examination of the blood was negative for malaria. From this time the temperature stayed above normal until the 17th of January, as will be seen on referring to the thermograph. On the 14th a Widal test was requested, which was negative. At this time the temperature resembled that of typhoid fever very closely, although the patient had no symptoms referable to that disease, complaining mostly of pains in the back and slight headache. Upon the 16th of January a request was made for a Malta fever test, and a reaction was obtained almost immediately with a dilution of 1 to 100. This test was performed repeatedly afterward, until the patient's discharge from the Hospital, and was always positive. Upon referring to the thermograph in this case it will be seen that the temperature curve is irregular. The temperature from the 7th of January to the 17th staying above normal and resembling that of typhoid, while after the latter date the temperature became more irregular, there being a daily remission, thus approaching the quotidian character shown in chart No. 1. The patient ran a temperature from January 7 until January 31, and was then returned to duty after the temperature had remained normal for several days. This infection was undoubtedly contracted in the Philippines, as the patient had been entirely well until his arrival in the Islands, and there suffered from attacks which he said were similar to the present one. The chief symptoms complained of were muscular pains, especially prominent around the articulations, and slight headache. Bowels were constipated and considerable anemia developed during the attack.

CASE 3. J. M. Sergeant, 4th Infantry. Age 24 years. American.

History previous to Admission: On conversation with the patient he said he had suffered from several so-called malarial

attacks in the Philippines, lasting from one week to three, although they were treated vigorously with quinine. There can be no doubt that these attacks were not malarial in character and were probably due to Malta fever.

History after Admission: Patient appeared in good flesh but was somewhat anemic. He complained of constipation, there having been no bowel movements for several days. Besides constipation there was some tenderness in the region of the gall bladder, and the patient said that he had suffered severely from muscular pains in the lumbar region and pains in the joints. Physical signs negative. Patient was admitted to Hospital January 21, and complained of constipation. At the time of admission the temperature was 102° , but an examination of the blood did not show any malarial infection. On January 24 a request was made for a Malta fever test, and an immediate reaction was obtained, very marked, with a dilution of 1 to 100. This reaction was repeatedly confirmed during the patient's stay in the Hospital. From the 21st of January to the 29th the patient ran a low temperature, never above 102° , and generally between 101° and normal. He complained mostly of pains in the joints. Tongue appeared fairly clean. There were no physical signs whatever which could be considered characteristic.

On February 5th patient was discharged from Hospital, having had a normal temperature since the 29th of January. I have not reproduced the temperature chart in this case, as it is uninteresting showing simply a low, quotidian temperature curve entirely uncharacteristic. The case is of value, however, in showing the unreliability of the temperature chart in Malta fever.

CASE 4. N. S. L. Artificer, 4th Infantry. Age 23 years, American.

History previous to Admission: Patient suffered from repeated attacks of so-called malaria in the Philippines, having chills, severe muscular pains and headache, these attacks lasting from one to two weeks. Patient's blood was never examined, but the attacks simulated those of malaria so closely that they were considered to be of that character. Quinine was given in large doses but had no effect on the fever.

History after Admission: Patient was admitted to this Hospital January 24, 1902, with a temperature of 103° , and complained of severe headache, backache and pain over the spleen upon pressure. There was a history of decided chill. He appeared anemic and jaundiced and was constipated. Said that he had had similar attacks in the Philippines. An examination of the blood on the 26th was negative for malaria, but gave a marked reaction with the micrococcus melitensis in a dilution of 1 to 100. Patient's temperature reached normal on the 26th, although no quinine had been given, and remained normal until the 4th of February, at which time patient had a slight chill, temperature reaching 103° , and showed a quotidian reaction for a period of five days after. It remained normal until he was discharged on the 19th. During this time the patient did not appear to be very sick, the only thing complained of being pains in the joints. The temperature chart is not reproduced as it is not of especial interest.

In considering the four cases noted it will be seen that the first two cases are those of acute exacerbations of Malta fever in which the patient runs a temperature for a considerable length of time, while the latter two cases are characteristic of the chronic form of the disease, in which the temperature is but little above normal, and the chief symptoms present are those of articular rheumatism. Both of the latter cases would have been diagnosed as cases of articular rheumatism had it not been for the Malta fever reaction.

METHODS OF PERFORMING SERUM TESTS FOR MALTA FEVER.

The serum test for Malta fever was first described by Wright, of the Royal Army Medical School at Netley. The methods of performing the test vary somewhat but the principle is the same in all. He discovered that the serum of Malta fever cases had the power of agglutinating the micrococcus in suspension, and that this reaction took place earlier than the Widal reaction and in much more dilute solution.

Wright's Method: Sedimentation tubes having a diameter of less than 1 millimeter and an agar culture of the micrococcus are used in making the test. A salt solution suspension is made, and this solution is used to dilute the blood serum, the dilution vary-

ing according as the test is desired to be more or less delicate. It makes no difference whether the micrococci are alive or dead, the agglutination reaction taking place as well with one as the other.

Curry's Method: Curry's method of performing the test as described by him (Malta Fever, *Journal of Medical Research*, Vol. 6, No. 1) differs somewhat from that of Wright, and is thus described by him. I used common glass tubing about three to four mm. in diameter, and made the observations macroscopically, and as a control made microscopical observations of drops of the fluid withdrawn by means of a platinum loop from the top, middle and bottom of the tube. Tubes 7.5 cm. long and 3 to 4 mm. in diameter were made from glass tubing and the bottoms were drawn out to a long, sharp point. These were sterilized and plugged with cotton in the dry sterilizer. Salt solution suspensions were made according to the method used by Wright. Bacteria were killed by heat at 60° C. for 15 minutes, and 0.5% carbolic acid added. As a routine method one drop of blood serum were mixed with nineteen drops of normal salt solution, then equal parts of this mixed with the salt suspension of the culture of the micrococcus melitensis and placed in the small tubes of the sterile pipette. This with dilution of 1-40. A reaction was called positive and complete only when, in addition to the precipitation of the bacteria in the bottom of the tube, the supernatant fluid became clear.

Author's method: In performing the serum test for Malta fever I have used practically the same method as that used for making the Widal test. A pure culture of the micrococcus, either upon agar or in bouillon, was used. The test may be performed either with the fresh serum or with a dry drop of blood, the latter being used preferably as it is simpler and easier to procure. A drop of blood is secured upon a glass slide and diluted with enough sterilized water to dissolve it. A graduated pipette of very small caliber is used to make the dilution with the micrococcus. Having dissolved the drop of blood a known portion is taken from it by the pipette and placed upon a clean slide. This is then diluted with a measured quantity of the bouillon culture, or with a suspension of the agar culture made with sterilized water. The

pipette is so graduated that a dilution can be made from 1-10 to 1-150. A cover glass is then placed over the mixture and this examined microscopically. In using the agar suspension, the drop should first be examined so as to be sure there is no agglutination present before the blood is added. Preferably I have used a dilution of 1-75, although the agglutination reaction has been obtained with dilutions as high as 1-250 immediately. This method is easy of performance, all that is needed being the culture, the special graduated pipette and the cover glasses and slides, and the drop of blood. The method was used in all the cases described, and controls with a serum of either disease made at the same time; and it was found perfectly reliable.

LITERATURE.

The literature concerning the appearance of Malta fever among soldiers of the United States Army is very limited. The first case described was that of John H. Musser, of Philadelphia, in the *Philadelphia Medical Journal*, December, 1898. His case was that of an officer who contracted the disease in Porto Rico, and he was the first to draw attention to the fact that the disease was probably endemic in that island.

In the report of the Surgeon General of the Army for 1899, Walter Cox described a case occurring in Porto Rico and observed by him. The patient was a private of the Hospital Corps, thirty years of age. He came under observation January 14, 1899. He contracted the fever in the guard house of an old Spanish barracks, the fever commencing January 11, 1899. He complained of pain all over the body, especially in the bones and joints. Had two chills on successive days but none afterward. This was at the commencement of the illness. The appetite was poor and the bowels were first loose and later constipated. The temperature curve showed daily remissions and reached normal gradually. The morning temperature for a considerable time reached the normal point, but was 1, 2 or 3 degrees above normal toward evening. He was discharged from the Hospital on April 3d, after about a week of normal temperature, but was re-admitted April 7th suffering again from fever. This attack was similar to the first. The blood was examined repeatedly for the malarial para-

sites, as well as for the Widal reaction. A test with a culture of the micrococcus melitensis showed a marked agglutination in dilutions as high as 1-60. Chamberlain, while on duty on the Hospital ship "Relief," at Manila, P. I., observed two cases of the disease in soldiers, which were reported to the Surgeon General of the Army. The men were in adjacent beds and both presented mild attacks. The temperature curve was irregular, being markedly remittent nor undulating. The cases were first diagnosed as malarial fever, but the Malta fever reaction was performed at the laboratory of the First Reserve Hospital and both were found positive. Examination of the blood for malarial parasites and the use of the Widal test both resulted negatively. Curry and Strong in 1900 reported cases occurring at the First Reserve Hospital. Strong performed an autopsy upon a man who had died from a continued fever of long duration. The postmortem showed that it was neither typhoid nor malaria and cultures from the case made by Curry resulted in the finding of the micrococcus melitensis. Inoculations into monkeys produced the typical symptoms of Malta fever. While performing these experiments Strong became infected and suffered from a typical attack of the fever. In another case the condition was discovered postmortem and cultures were obtained of the micro-organism. At this time two cases were observed in the Wards of the Hospital which gave the reaction with the micrococcus and were undoubtedly cases of Malta fever.

The most valuable report on Malta fever occurring in soldiers of the Army is that written by Curry and published in the *Journal of Medical Research*, Vol. 6, No. 1. In this report Curry describes the cases which have come under his observation both in Manila and in the Army and Navy General Hospital at Hot Springs, Arkansas. Besides the four cases of Malta fever observed in Manila, he observed in all eight cases of Malta fever in the Hospital at Hot Springs. Four of these are described in extenso, the notes of the other four cases occurring in a note at the end of the report. All four of the latter cases were in a convalescent stage, the prominent symptoms being those of articular rheumatism, constipation and frequent profuse sweatings. These

cases were all diagnosed as articular rheumatism. Of the four cases described more fully, all gave a marked serum reaction with the micrococcus melitensis when in a dilution as high as 1-300. None of the cases presented the symptoms found in the acute stage. The symptoms complained of were pains in the articulations, constipation and sweating, and all showed anemia. These cases were all supposed to be suffering from chronic articular rheumatism.

In his recapitulation Curry says "We have four cases of what was thought on admission to be chronic rheumatism. These cases have not improved under treatment nor by change to this favorable climate. Neither anti-rheumatic nor anti-malarial treatment has benefitted these men. In spite of treatment and favorable conditions repeated and more or less regular recurrences of acute rheumatic pains and swellings and of fever have taken place. These conditions have lasted a long time, from six months the shortest, to sixteen months the longest of the series. The other prominent symptoms have been anemia, profuse sweatings and constipation. The blood examinations for malarial fever and typhoid were negative, save in the case of one who had severe typhoid fever two years ago. The clinical history of these cases corresponds with that of Malta fever, and the result of the serum test with the micrococcus makes it certain that the diagnosis of Malta fever in these cases is a correct one."

The important lesson to be learned from a study of the literature of Malta fever occurring in the United States Army, and from the study of the cases described in this report, is that the condition is one not easily recognized clinically, and one apt to be mistaken for typhoid, malaria, or in the chronic stage for articular rheumatism. This being so, the great value of a microscopical examination of the blood and the performance of the serum test is at once proven. None of the cases observed by me were diagnosed as Malta fever, and in only one of them was there any suspicion of the occurrence of this disease. The two cases presenting the chronic symptoms would, in all probability, have been transferred to Hot Springs, Ark., for anti-rheumatic treatment, while in the two cases presenting the acute symptoms the

patient would probably have been treated for either malarial or typhoid fever. In fact in cases when, on account of finding malarial parasites at different times in the patient's blood the treatment had been altogether that for malaria, and had a diagnosis of Malta fever been made more quickly much discomfort would probably have been saved the patient.

The following conclusions may be drawn from the study of these cases:

1st. There occurs in the Tropics a fever which may resemble in its acute stage either typhoid or malaria and in its chronic stage articular rheumatism, caused by the micrococcus melitensis.

2d. There are no pathognomonic symptoms of Malta fever. The symptoms observed are so inconstant and confusing that no one of them can be said to be typical of the disease.

3d. A differential diagnosis of this fever is almost impossible in the majority of cases without the aid of the microscope and the serum test.

THE HEALTH OF RUSSIAN TROOPS IN THE RUSSO-JAPANESE WAR.

THERE have been so many conflicting statements with regard to the health of the troops in the Orient that the following facts from the Russian "Official Messenger" are of particular interest although not of the most definite character. "Up to June 26th the number of officers and men in hospital amounted to 7.136 per cent. and 3.943 per cent. respectively of the total forces. If the wounded officers and men already removed to the rear are included, the percentage is 10.24 and 6.51. After the beginning of the rainy season—on July 9th—the percentage of officers and men in the hospitals rose to 8.384 and 4.646 respectively, the proportion of patients suffering from infectious diseases increasing from 2.19 per cent. to 8.52 per cent. including a percentage of dysentery cases of 1.99."

AMPUTATION OF THIGH AFTER GUNSHOT WOUND.

BY CAPTAIN FREDERICK H. SPARRENBERGER,
LATE ASSISTANT SURGEON OF UNITED STATES VOLUNTEERS.

IN July 1900, I was surgeon of the expedition, under Lieutenant Colonel James Parker, that went from Nueva Caçeres to San Jose de Lagonay, Camarines Province, Luzon, and while at San Jose de Lagonay, a native who had been wounded by one of our men, was sent to me for treatment; he reached me five days after having been wounded.

He was hit in the right thigh, 3 inches above the knee, and when I saw the case, gangrene was present; I informed him amputation was necessary and he submitted after a slight hesitancy.

I had him anesthetized by a private of Co. K 45th Infantry, who, due to the fact, that he had had one year's experience in a civil hospital as orderly, was detailed as acting Hospital Corps man; and who had never given, or seen given, an anesthetic, and assisted by Lieut. Tyner, now 2nd Cavalry, I amputated the limb at the upper third.

The patient rallied very readily and three days after amputation, I had him removed from hospital, on account of being crowded for room, to a native shack in town, and would go there to treat the case.

One week after removal from the hospital the owner of the shack reported that the patient had escaped during the night, by raising the bamboo floor of the shack, and dropping to the ground four feet below, where his trail was found, leading to the road and there lost.

Six days later he was discovered, by the native police, in a cocoanut grove three miles from town; he had crossed rice paddies, a creek, and a hemp grove. The policemen brought him back to headquarters on the back of a dirty, sweaty pony, which was afflicted with glanders, no bandage on the stump, the sutures all torn out, and the flaps of the stump gaping and wide open.

I cleaned up the wound, brought the flaps together by adhesive plaster strips and bandages, and within 30 days discharged him, the stump nicely healed, but with a great ragged scar,—and in all this time there was not one drop of pus!

Two weeks later, his wife called on Col. Parker, and informed him, that she did not want her husband any more, as he had only one leg and could no longer earn a living for her, and requested the Colonel to straighten out the matter, demanding aid from the United States, as her husband had been shot by an American soldier, and his leg amputated by an American Medico.

The surprising part of the case was the entire absence of pus, 6 or 7 days after amputation patient traveled 3 miles, by raising his body on his hands, bringing it forward, resting on his buttocks, then bringing his body forward again, and so on; and in this manner crossed rice paddies, which were then being irrigated, crossed a creek, went through a hemp grove, thick with underbrush, was gone six days, was brought back on a dirty pony, with the open wound rubbing the back of the pony, with no treatment, saving the application of banana leaves, which patient himself applied to cover the wound, and in the face of all this exposure, there was no pus.

WOUNDED RUSSIAN SAILORS AT HONG KONG.

DURING my stay at Hong Kong I visited, with Dr. Atkinson, the principal medical officer of the colony, the wounded Russian sailors who had just come down from the action at Chemulpo. They were in the General Hospital and were all doing well. Their injuries were mostly shell wounds from splinters. One case only was serious, and in this instance the tissues of the forearm had been much torn up by a flying fragment. The men were all of exceptionally fine physique, and they lost no opportunity of expressing their satisfaction with their surroundings. The sisters said they made exceptional patients, and it was wonderful how easily everything was managed, considering that their language was intelligible to none.—*Sir Frederick Treves.*

THE UNITED STATES ARMY GENERAL HOSPITAL
AT THE PRESIDIO, OF SAN FRANCISCO,
CALIFORNIA, 1901-1902.

By COLONEL ALFRED C. GIRARD,
ASSISTANT SURGEON GENERAL, IN THE UNITED STATES ARMY.

Part 4.

3. SURGICAL WORK OF THE HOSPITAL.

SURGICAL CASES treated during the fiscal year ending June
30, 1902.

Hernia, (a) Inguinal.....	96	
(b) Ventral.....	8	
(c) Umbilical.....	2	
	<hr/>	
Total.....		106
Varicocele, (a) Right.....	2	
(b) Left.....	33	
	<hr/>	
Total.....		35
Hemorrhoids.....	40	
Fistulae in ano.....	12	
Appendicitis.....	27	
Empyema.....	18	
Gunshot Wounds, Head.....	4	
Face.....	2	
Shoulder.....	2	
Elbow.....	3	
Forearm.....	7	
Hand.....	12	
Abdomen.....	1	
Chest.....	1	
Hip.....	2	
Thigh.....	10	
Leg.....	10	
Ankle.....	2	
Foot.....	4	
	<hr/>	
Total.....		58
	(244)	

Fractures, Skull.....	6	
Clavicle.....	4	
Scapula.....	2	
Humerus.....	7	
Elbow.....	3	
Olecranon.....	1	
Radius.....	8	
Spine.....	3	
Ribs.....	3	
Inferior maxilla.....	4	
Metacarpal.....	4	
Phalanges.....	6	
Femur.....	7	
Ilium.....	2	
Patella.....	3	
Tibia and fibula.....	9	
Os calcis.....	1	
Metatarsus.....	4	
Nasal bones.....	6	
Total.....		83
Dislocations, Hip Joint.....	2	
Ulna.....	3	
Phalanges.....	2	
Humerus.....	1	
Knee.....	1	
Total.....		9
Wounds, Lacerated.....	11	
Incised.....	8	
Infected.....	12	
Punctured.....	7	
Contused.....	8	
Bolo.....	10	
Granulating.....	3	
Total.....		59
Burns.....	5	
Abcesses, various regions.....	49	
Ulcers, various regions.....	15	
Mastoiditis.....	3	
Adenitis, Inguinal, Nonspecific.....	8	
Cervical.....	9	
Total.....		17

Cellulitis, various regions	11
Talipes varus, acquired	2
Myelitis	2
Periostitis	8
Carbuncle	3
Hepatic abscess	10
Peritonitis, Tubercular	1
Ankylosis, various joints	15
Epididymitis, Traumatic	2
Stricture of esophagus	1
Gingivitis	1
Bursitis	1
Synovitis, Chronic and Acute	9
Floating cartilage, knee	3
Necroses	4
Epilepsy, Traumatic	1
Tumors, Cystic	6
Fibroma	1
Exostoses	3
Scirrhus carcinoma	2
Epithelioma	2
Adeno-sarcoma	2
Sarcoma	5
Osteo-sarcoma	1
Carcinoma	5
Total	27
Varicose veins	10
Hydrocele, Traumatic	4
Meningomyelitis	1
Ingrowing nail	12
Biliary fistula	2
Fæcal fistula	2
Urinary fistula	2
Rectal stricture	1
Prolapsus rectum	3
Undescended testicle	1
Atrophy of testicle	1
Cerebral concussion	2
Ganglion, foot	1
Arthritis, Tubercular	2
Sprains, various regions	24
Trauma, back	2
Division of tendon	1
Vaccinia	7

Lymph, scrotum.....	1
Pes planus	3
Prostatectomy.....	2
Vesical calculi.....	2
Total.....	723

The following is a list of the principal operations performed at the Hospital for the fiscal year ended June 30, 1902, operator Colonel A. C. Girard:

	No. of Cases.
Herniotomies.....	57
Inguinal.....	53
Ventral.....	2
Umbilical.....	2
Varicocele.....	35
Right.....	2
Left.....	33
Appendectomies.....	23
Resection of rib for empyema.....	7
Pleurisy with effusion.....	6
Hemorrhoids.....	31
Fistulae in ano.....	3
Stricture of rectum.....	2
Exploratory abdominal sections.....	6
Perineal section for urinary fistula.....	1
Craniectomies.....	4
Traumatic epilepsy (Bolo wound).....	1
Gunshot wound of the skull.....	1
Depressed fractures.....	2
Enucleation of Eye.....	2
Perineal cystotomy for Vesical calculus.....	1
Castration.....	3
Hydrocele, Traumatic.....	4
Amputations.....	18
Toes.....	7
Foot.....	1
Leg.....	3
Thigh.....	1
Hip joint.....	1
Fingers.....	3
Hand.....	1
Breast.....	1
Tumors.....	12
Carcinoma of the parotid gland.....	1

Carcinoma of colon.....	1
Fibroma of abdominal wall.....	1
Sarcoma of testicle.....	3
Epithelioma of gums.....	1
Epithelioma of prepuce.....	1
Cystic tumor of popliteal space.....	1
Exostosis, orbital plate, frontal bone.....	1
Exostosis of femur.....	1
Osteosarcoma of femur.....	1
Cholecystomies	3
Cholecystitis.....	1
Cholelithiasis	2
Enterorrhaphies.....	4
Malignant growth of colon.....	1
Fecal fistulae.....	3
Cholecysto-enterostomy.....	1
Floating cartilage of knee.....	1
Skin grafting of chronic ulcer.....	1
Varicose veins of leg.....	5
Prostatectomies	2
Tendon suturing.....	1
Tenotomy for acquired talipes varus.....	1
Resection of ulna.....	1
Fractured patella (wiring).....	1
Fractured clavicle (wiring).....	1
Osteotomies	2
Re-amputation of stump of spermatic chord.....	1
Trachelorrhaphy.....	1
Curettement of uterus.....	1
Ingrowing nails.....	12

Hemorrhoids: The principal steps preparatory to operation were as follows:

Patient was confined to bed at least twenty-four hours prior, given a hot bath, the operation area shaved, scrubbed with tincture of green soap and flesh brush, then with 1 to 1000 bichloride solution, and a moist bichloride dressing applied. The night previous, fractional doses of calomel were administered, followed by 1 oz. of tartrate of soda and potash. On the morning of operation patient was given three successive rectal enemata.

After anaesthetization, patient being placed in lithotomy position, the parts were washed thoroughly again with green soap and water, ether and alcohol. Sphincter was thoroughly stretched,

and a sponge introduced into the rectum through a cylindrical speculum, with a string tied to centre of sponge to permit of traction in order to evert the hemorrhoidal masses. Hemorrhoids were seized with anatomical forceps and circular incisions were made at the muco-cutaneous junctions. Catgut ligatures were applied to pedicles and excess of tissue was removed with scissors. The mucous membrane was then sutured to skin with interrupted catgut. The rectum was irrigated with normal saline solution. Iodoform suppositories were inserted within the rectum, a rubber drainage tube wrapped in spindle-shape with strips of iodoform gauze was introduced, allowing one end to protrude from the anus. The dressing was completed by gauze compress and T bandage. Patient was put to bed, kept on liquid diet, and bowels confined for five days by administration of opium. Then free catharsis obtained on fifth day by castor oil.

All cases made an uninterrupted recovery with excellent result. No secondary hemorrhage occurred. Operation proved radical cure so far as could be traced.

Appendectomies: Of the twenty-three cases operated upon, four were ulcerative, four presented abscess formation, three perforation with abscess, two were gangrenous and ten were acute and chronic catarrhal.

In the acute cases a rise in temperature usually ushered in the attack. Pain after eating, at first colicky and referred to the epigastrium, later becoming localized at the site of appendix. Tenderness was always present, pain of greatest intensity being over the appendix, right-sided rigidity of rectus abdominis muscle and most marked over the inflamed area. Vomiting at the onset was very common. In the chronic cases localized pain and tenderness were the most prominent symptoms, with very slight rise in temperature if any, and very often a subnormal temperature existed. Cessation of pain and fall in temperature indicated either gangrene or abscess formation. Leukocytosis could not be relied upon as a characteristic symptom, except in cases where pus had not been walled off from the peritoneal cavity. Dullness and the presence of the tumor could be detected when the inflammation and effusion was localized, and near the surface.

Some of the worst cases, however, did not present any evidence of tumor. The operation in all cases not requiring drainage was as follows:

Skin incision 1 to 1½ inches in length was made in the direction of the fibers of the external oblique, the middle of incision corresponding to the intersection of two lines, one drawn between the umbilicus and the anterior superior spine of the ilium, and the other drawn from the middle of and at right angles to Poupart's ligament. The abdominal cavity was opened by the gridiron incision, i. e.; dividing the separate layers in the course of their fibres. When the peritoneal coat was reached it was raised with forceps, to avoid injury to the intestines, and abdominal cavity then opened. In most cases where there was a simple catarrhal condition, or where there were no adhesions, no difficulty was encountered in the delivery of the appendix. The appendix was drawn into the mouth of the wound, the cecum protected with sterile gauze, and the appendix amputated by means of the thermo-cautery. The stump was invaginated by purse-string silk suture, and the whole covered with a small portion of the meso-appendix lightly tied over the invagination. The cecum was returned to the abdominal cavity, the peritoneum closed with purse-string catgut suture, the sheath of the rectus and internal oblique and external oblique united separately by continuous catgut. Deep and superficial fasciae were sutured separately with continuous catgut, and skin united without drainage by intercuticular silkworm gut introduced subcutaneously. A dry absorbent dressing was applied and held in position by strips of adhesive plaster, and the entire dressing covered with sterile towels, and dressing completed by many-tailed abdominal binder and perineal straps.

In all cases where there was gangrene or abscess formation, the abscess cavity, after evacuation and securing the stump of the appendix with purse-string suture introduced in the cecum about its base, the cavity was irrigated with the normal saline solution, and then the wound was dressed openly, packing the cavity with strips of iodoform gauze, allowing it to granulate from the bottom. As far as known no ventral hernia has occurred in any case.

Herniotomies: Of the fifty-seven cases operated upon, fifty-three were inguinal, two were ventral and two umbilical. Of the cases of inguinal, five were recurrent cases, which had been operated upon in the Philippines and where there had not been primary union; forty-three were single and five double. Nine were direct and forty-four indirect. Twenty-four were incomplete. The majority were acquired, a large number existing without the knowledge of the soldier until re-examination by the surgeon. The causes producing or predisposing were trauma, heavy lifting, prolonged marching or difficult mountain climbing and lowered tonicity of the general muscular system from some previous illness. None were irreducible (except small portion of the omentum adherent to sac in a few cases), incarcerated, inflamed or strangulated. Of the ventral cases, one was an epigastric hernia, which is very rare, the omentum being adherent to the abdominal wall and giving rise to considerable discomfort when standing, by dragging on stomach and colon. In this case there was an absence of a distinct external tumor.

In the inguinal herniae the following conditions of sacs and contents were noted:

One sac was double; in two cases no sac was apparent; the contents of five cases were adherent; fourteen contained omentum and three intestinal contents, one case containing both omentum and intestine; four cases presented a large amount of preperitoneal fat, and in four cases there was a small hydrocele of the cord at the head of the hernial sac. The majority of sacs were found empty at the time of operation.

In the ventral and umbilical herniae an elliptical incision was made through the abdominal wall, contents of sac reduced, the omentum freed and the abdominal wound closed by purse string catgut suture through the peritoneum, and buried silver wire closing the wound in muscles. Skin incision united by intercuticular silkworm suture subcutaneously.

The operation of the inguinal cases was as follows:

A linear incision $2\frac{1}{2}$ inches in length was made in the course of the fibres of the external oblique, beginning on a level with the anterior superior spine of the ilium, parallel to and $\frac{1}{2}$ inch

above the ligament. Incision was carried downward through skin, superficial and deep fasciae and aponeurosis of the external oblique, the aponeurosis being divided about $\frac{1}{2}$ inch above the internal abdominal ring. Cut edges of aponeurosis were held with forceps and dissected free from underlying muscles as far as the rectus sheath internally and down to the deep portion of the ligament externally. Sac and cord were isolated en mass by blunt dissection with the fingers. The cord, with its vessels, was then separated from the hernial sac by blunt dissection, and held aside with strip of sterile gauze. Sac was freed up to the internal abdominal ring, opened, contents were examined, and in cases where the omental contents were adherent this portion was removed: the remainder of the contents being returned to the abdominal cavity, ligature applied to the neck at the internal abdominal ring and the fundus excised. Further reinforcement of the opening in abdominal wall was secured by suturing neck of sac. Five interrupted catgut sutures were introduced with blunt-pointed needles beneath the cord from within outwards, through the internal oblique, transversalis and transversalis fascia and the deep portion of Poupart's ligament, the lowermost suture embracing the conjoined tendon. The cord was returned to the canal and the aponeurosis of the external oblique was united by interrupted catgut suture. The deep and superficial fasciae were sutured separately with continuous catgut, and the skin incision closed without drainage with intercuticular subcutaneous silkworm gut suture. An absorbent dressing, held in position by strips of adhesive plaster, and a many tailed abdominal binder applied.

The patient was kept on a liquid diet for five days. The skin suture of silkworm gut was removed on the 14th day, patient confined to bed for twenty-eight days, and required to wear a special abdominal binder the invention of Col. A. C. Girard, for at least one year after discharge from Hospital.

Sarcoma of testicle: All three cases were in men who were comparatively young, ages being twenty-five, twenty-seven and thirty-four years respectively. Causation in two cases was injury on pommel of saddle while riding. The third case was due to fall while on an expedition in the P. I. All showed rapid and ma-

lignant growth after the injury. Symptoms of dull aching pain and cachexia and emaciation. All cases were complicated by large effusion into the tunica vaginalis. The microscopical examination of specimens revealed two to be of the cystic and one a small round celled sarcoma. Sufficient time has not elapsed since the operations to report as to metastases in the internal organs.

Varicocele: The operation resorted to in all cases was the suprapubic. Incision of one inch over the external abdominal ring through skin, superficial and deep fascia to the cord. The cord was raised and the dilated veins isolated by blunt dissection from the vas deferens and its vessels, and section of two or three inches removed after the application of two catgut ligatures. The ends were tied together and the stump anchored to the external pillar of the external ring. The skin wound was closed by suturing deep and superficial fasciae separately with continuous catgut, and the skin by intercuticular, subcutaneous silkworm gut.

Patient confined to bed for ten days, and required to wear a suspensory bandage on discharge from Hospital. All cases did well. No case reported of atrophy of testicle following operation.

4. BACTERIOLOGICAL LABORATORY.

The following Circulars of Information concerning the work of the Pathological and Bacteriological Laboratory have been issued during the year.

GENERAL RULES OF LABORATORY.

As the Circulars and Orders concerning the Laboratory work of the Hospital are scattered over a period of two years, it has seemed well to the Commanding Officer to gather them together in a compact form for the convenience and information of the Medical Officers and others concerned. The following circular has, therefore been compiled, and it is hoped that it will prove of value in assisting the scientific investigation of disease in this hospital.

1. Medical Officers on duty at this Hospital are urged to make the fullest use of the facilities offered them for bacterio-

logical and pathological research in connection with their clinical work.

2. Wherever possible, the clinical diagnosis will be verified by the Pathologist—as in cases of pulmonary tuberculosis, malaria, amoebic dysentery, etc., and whenever such confirmations cannot be obtained, the fact will be stated on the diagnosis card.

3. The pathological blank must be filled out complete and accurate in every detail before being sent to the Pathologist; especial attention should be paid to remarks concerning "previous attacks of typhoid or malaria", and as to "clinical diagnosis and prominent symptoms." The report, when returned to the Ward Officer, should be filed with the records of the case.

4. Specimens of urine, faeces, sputum, etc., must be accompanied by the proper printed slip securely fastened to the bottle so that identification may be assured; these will be sent to the Laboratory not later than eight o'clock a. m., except in cases of emergency.

5. On Sundays, and after the regular hours for examination on other days, examinations will be made in the Laboratory, but, in such cases, the word "Special" will be written upon the blanks used for such examinations by the Ward Surgeon.

EXAMINATIONS OF BLOOD.

1. The blood of every patient admitted to this Hospital is to be submitted to the Pathologist for examination. If nothing abnormal is found, the first examination will be considered sufficient, unless a request is made for another by the Pathologist or by the medical officer in charge of the case. Where the malarial plasmodium is found, or any other abnormal condition, the blood is to be re-examined as often as the Medical Officer in charge of the case considers necessary.

2. Requests for blood examination should be sent to the Laboratory before 10 o'clock A. M.

3. All cases entering this Hospital with a diagnosis of malarial fever, malarial cachexia or in which malarial infection is suspected should not have the blood examined until at least a week has elapsed after entry, unless active symptoms are present be-

fore that time. Quinine should not be administered to any such case until the blood has been examined and the diagnosis confirmed by the Pathologist, except in pernicious cases or where, owing to some complication, quinine is necessary.

4. The attention of the Medical Officers at this Hospital is called to the large number of patients whose blood examination shows malarial parasites, but in which no clinical signs are present. Since August 20th, 1900, there have been over 150 such cases. As it is hardly probable that in so large a number there has been no rise of temperature during the twenty-four hours, it is recommended that, when possible, the temperature of all patients giving a history of malarial infection be recorded every four hours, as in the malarial fevers of tropical origin the morning and evening temperature cannot be relied upon.

5. In suspected cases of syphilis the "Justus test" should be requested. This test has been proven of great value and is performed as follows: a haemoglobin estimation should be requested of the Pathologist and treatment by mercurial unctions begun immediately after the specimen of blood has been taken. At the end of twenty-four hours after the commencement of the treatment a haemoglobin estimation should be again requested, and if a marked reduction is present (10 to 40 per cent) the diagnosis of syphilis is justifiable. This test should be requested in all doubtful cases, including glandular enlargements of unknown origin. The blank requesting the examination should be marked plainly "For Justus test."

6. In all cases of continued fever of doubtful origin, especially if accompanied by pains in the articulations, in which the Widal test is negative, as well as the examination for malarial parasites, the serum test with the micrococcus of Malta fever, or micrococcus melitensis, should be requested. Requests for this test should be plainly designated "for Malta Fever."

7. In all suspected cases of typhoid fever the Widal test should be requested, with the designation "For Widal."

8. In all cases where suppuration is suspected an examination should be requested for leucocytosis, which, if present, as a rule indicates the presence of pus. It should be remembered

that a leucocytosis is present in many processes, as pneumonia, small pox, glanders, acute articular rheumatism, septic meningitis, cholangitis, cholecystitis, cystitis, gonorrhea, etc. In cases of appendicitis a leucocytosis often indicates pus formation, but not invariably.

In tuberculosis there is a marked leucocytosis, the eosinophiles especially becoming increased. In suspected cases examination of the blood is of great diagnostic importance. The request should state "For Leucocytosis.

9. In marked cases of anaemia, whether primary or secondary, a blood count should be requested, and in cases of suspected leukemia a count of the leucocytes should be asked for.

10. Requests for examination of the blood of cases suspected of suffering from any of the forms of malarial fever, should, whenever possible, be made between the paroxysms, when the parasites are most numerous in the blood. The parasites of malarial fever, especially the estivo-autumnal parasites, are least numerous in the peripheral blood during the chill, and examination of the blood at that time may often result negatively. If quinine has been administered the search for the parasite of malaria is generally fruitless, and should not be requested. The request should state "For Plasmodium."

EXAMINATION OF URINE.

1. The urine of every patient admitted to the Hospital is to be examined at least once; in cases which show no pathological condition of the urine, and which are not bed patients, the urine is not to be again examined, unless requested by the Pathologist or by the Medical Officer in charge.

2. In pathological urine and in the case of all bed patients, the urine is to be examined once a week unless (in case of emergency) a more frequent examination is considered necessary by the Medical Officer in charge of the case.

3. In all cases of septic poisoning and in cases in which there is suspected intestinal putrefaction, the indican test should be requested. The request should state "For Indican."

4. Clean bottles for urine can be obtained from the laboratory. Urine for analysis should be the first in the morning

and the last at night and should be brought to the laboratory before 8 A. M. Label each sample with name of patient and ward.

EXAMINATION OF SPUTA.

1. Hereafter all cases entering the Hospital suspected of or diagnosed pulmonary tuberculosis will have the sputum examination for six consecutive days, provided the bacillus of tuberculosis is not demonstrated. The first examination should be made as soon as possible after entry.

2. In sending such sputa to the laboratory for examination the Ward Surgeons will mark the blanks "Suspected Tuberculosis," and in all such cases the Pathologist will personally see that the required number of examinations are made upon consecutive days. If for any reason sputum cannot be obtained for examination, the Ward Surgeon will so notify the Pathologist.

3. In cases of suspected tuberculosis in which, even after repeated examination of the sputa, no tubercle bacilli are demonstrated, the Ward Officer should recommend transfer to Fort Bayard, provided the physical signs are sufficient to warrant the diagnosis.

4. In collecting sputum for examination, the following precautions should be observed. Always collect sputum which is first expectorated in the morning. Have the spit cup free from disinfectants. Never dilute the sputum with water. Never allow anything to contaminate the sputum, as tobacco juice, insects, etc. Instruct the patients in these particulars.

5. Specimens of sputa to be examined should be sent to the Laboratory before 8 A. M.

EXAMINATION OF FAECES.

1. The faeces of every case suffering from chronic dysentery or diarrhoea and having more than two bowel movements per day, will be submitted to the Pathologist for examination at least once and as often thereafter as he or the Medical Officer may direct.

This examination is for the purpose of determining whether or not the amoeba of dysentery is present and if so, that the proper treatment by quinine enemas may be at once instituted.

2. All cases showing the amoeba of dysentery, in the faeces shall be diagnosed as amoebic dysentery, and the diagnosis so recorded upon the clinical history of the case and the diagnosis slips.

3. Faeces to be examined should be passed into a perfectly clean, warm bed pan, in which there is no antiseptic of any kind. In transferring faeces from the bed pan to the glass jars, it should be seen that the jars are clean and no water or antiseptic should be mixed with the dejecta. The specimens should be brought to the Laboratory at once, as delay makes an examination for the amoeba useless.

MISCELLANEOUS EXAMINATIONS.

In cases of suspected diphtheria a culture from the exudation in the throat should be requested and the suspected case isolated until the result is known.

A report of the work done in the Laboratory will be submitted to the Commanding Officer by the Pathologist at least every two weeks, and a yearly report at the end of the fiscal year.

TUBERCULOSIS IN SOME OF THE SCHOOLS FOR NON-COMMISSIONED OFFICERS IN NORWEGIAN FORTIFICATIONS.

IN the *Norsk Tidsskrift for Militærmedicin*, Captain Hans Daae observes that among three hundred and twenty-two pupils who entered the School for Artillery Non-Commissioned Officers, tuberculosis appeared in thirty-seven,—11.52 per cent. In one hundred and nineteen pupils who entered the Mining and Engineering School for Non-Commissioned Officers, tuberculosis appeared in 5,—4.2 per cent. The disease appeared in 48 per cent. of the affected persons between the ages of nineteen and twenty-one. 50 per cent. had been in attendance at the schools for one to two years when the disease was diagnosed. About 90 per cent. of them came from absolutely healthy families where no tuberculosis was known to have existed. The writer points out that the reason for the large number of cases is to be found in the unhealthy housing connected with fortification quarters.

CASE OF SPONTANEOUS RUPTURE OF A BRANCH OF THE TEMPORAL ARTERY.*

By HAROLD D. CORBUSIER, M.D.

CONTRACT SURGEON IN THE UNITED STATES ARMY.

PPRIVATE H. W. A., 88th Co., Coast Artillery. White. American. Aged 20 years. Family History: the patient's family history has no bearing upon the case.

Previous History: The patient has been particularly free from illness and has never shown any tendency toward hemophilia.

Present condition: The soldier is in excellent health and all organs in perfect condition.

During night drill with the eight-inch guns on the evening of May 21st last, the soldier was leaning over a plotting board which was lighted by an incandescent light, of sixteen candle-power, situated about two feet from patient's head.

After having been in this position for about thirty minutes, the patient became suddenly aware that his face was dripping with blood which seemed to flow freely from the left eye. The hemorrhage happened without any premonitory symptoms and could not be controlled by the patient upon pressure over the affected point.

The soldier was hurried to the hospital, where, upon examination, I found his face to be covered with blood and the blood still spurting from a small artery in the lower lid at a point 5 millimeters below the outer canthus of the left eye. Deep pressure over the upper border of the zygoma controlled the hemorrhage to some extent, but the flow was not entirely stopped until hemostatic forceps were used to catch the artery at the point of rupture.

There was no evident cause for such a hemorrhage and the patient's statement to the effect that the eyelid was previously

*Published by authority of the Surgeon General, U. S. Army.

perfectly normal and was in no way injured, can be taken as verity.

It seems probable that there was present in this case an orbital branch from the superficial temporal artery and that at the point of hemorrhage the artery wall must have become weakened from some cause which could not be determined. Probably the position of the soldier, leaning over the plotting-board for some time, caused a congestion of the vessels of the head and this brought about the rupture of the artery at its weakened point. Whether the electric light took any part in causing the hemorrhage or not is difficult to say.

The amount of hemorrhage was considerable and seemed out of proportion to the extent of the injury.

The soldier has suffered no inconvenience, except a temporary photophobia during the hemorrhage and the only evidence now existing of the trouble, is a pin-head hyperaemic papule.

A NORWEGIAN VIEW OF THE GENEVA CONVENTION.

IN a historical and critical essay by Sanitary Captain Hans Daae of the Norwegian Army, the writer details the history of the Geneva Convention describing both the preliminary work of 1864 as well as the later expansions. He refers to the Geneva Conference of 1868 when the "additional articles" were adopted, the Hague Convention of 1899 and the Conference called for 1904 at Geneva. He presents the resolutions determined on in Geneva in 1868 and at the Hague in 1899 in full, together with the questions which the Conference of 1904 may take up for consideration. He also gives for the first time a translation of the Geneva code of 1864 in Norwegian.

He then proceeds to criticise each separate article of the Geneva Convention of 1864, bearing in mind the propositions which have been made from the most noteworthy sources for alteration of the several sections, and follows with a consideration of the most important propositions which have been made for new articles. He concludes by objecting strongly to the addition of supplementary articles to the existing code and recommends that an entirely new Convention be drawn up embodying the results of the Conferences of the past forty years.

TROPICAL ABSCESS OF THE LIVER.

By EDWARD WARWICK PINKHAM, A.B., M.D. HARV.

LATE ASSISTANT SURGEON IN THE UNITED STATES ARMY.

IN May 1900, the writer, then on duty in the Philippine Islands, was ordered to the Department Hospital at Iloilo, as operating surgeon, and held this position for about a year. The whole service of that year was replete with interesting and valuable experience. Surgical cases of nearly all kinds were continuously admitted to the hospital, some or them of such a character as to tax severely the knowledge and skill of the surgeon.

Among the more serious cases admitted were those of tropical abscess of the liver, accompanying or following amoebic dysentery. Sixteen of these cases came under the writer's care, and were treated surgically.

The following is a description of each case taken from notes made at the time.

CASE 1.—On Aug. 30th, 1900, N. S., a soldier, aged 29, was admitted to the hospital to be operated on for abscess of the liver, having been brought a distance of fifty miles for that purpose. He was a young man of good general physique, five feet seven and a half inches in height. At the time of admission he was somewhat emaciated, but no more so than many others who had been in the tropics a year or more and who were well enough to perform their duties. He gave a history of two attacks of dysentery, one a year and the other three months before admission. About a month before he noticed "a lump in the stomach" which had grown slowly larger. It did not cause him much pain at first, but at time of admission he had some pain on respiration and when the swelling was touched. Physical examination showed a rounded swelling about the size of a man's fist, on the right side of the epigastrium, bulging out from the lower border of the ribs. Under ether the abdomen was opened by an incision about two inches in length, parallel to the costal border, and one finger breadth below it. The liver thus exposed was sewed to the wall around the incision and the abscess cavity opened. It was found to be one centimeter from the surface. About 600 c.c.

of matter was evacuated, the cavity was washed out by a solution of peroxide of hydrogen, followed by one of corrosive sublimate, 1 to 8,000, and then packed with iodoform gauze.

The patient stood the operation, which was thirty-five minutes long, very well. The cavity was washed out daily with salt solution and packed with gauze, less being used each day. On the fifth day a discharge of bile began and kept up about four days. No untoward symptoms occurred. On the fourteenth day the patient sat up, and on the twenty-third day he was discharged cured. Microscopical examination of abscess contents showed a few bacilli which looked like colon bacilli, a few cocci, pus cells, cell detritus, changed liver cells and fat globules. No amoebae were discovered.

Manson advises that in cases of this sort the trocar and canula be used for the evacuation of the abscess. But as it seemed probable that the liver in this case was not adherent to the abdominal wall, and as there was no way of telling how far in the liver tissue the abscess was situated, it was decided that the safest proceeding would be to use the knife. The result proved that this decision was not an unwise one.

CASE 2.—A. C., 19th Inf., aged 19, was admitted to the medical side of the hospital for acute dysentery in the early part of Aug. 1900. It may be said here that the medical part of the hospital was entirely distinct from the surgical part and under different doctors. On Sept. 6th, surgical advice was sought on account of supposed appendicitis. The patient was found to be extremely emaciated and weak. He said he had been ill for six weeks, and that he had had one previous attack of dysentery. He had noticed some pain in the right hypochondrium for about three weeks. This pain had been attributed to colitis by his medical attendant. For two or three days the pain had extended down almost to the crest of the ilium and up to the costal border. Physical examination showed no swelling below the costal border. The liver was slightly enlarged and tender on deep pressure. Pulse rate 114 per minute. Temp. 102°F. The patient had been having between thirty and forty bloody stools daily up to three days before, since which time the number had been about ten. Consultation with Dr. Calkins led to the diagnosis of abscess of the liver; and although the patient was in poor condition for operation it was decided to try to evacuate the abscess, as it appeared that without some relief the case would soon terminate fatally. Amoebae coli were found in the stools.

In operating an incision was first made below the border of the ribs. On palpation through this opening no tumor could be discovered, and as the upper surface of the liver was not easily accessible from this point the opening was closed, and two inches of the eighth and ninth ribs resected in the mid axillary line. The pleura and diaphragm were cut through and the edges stitched together with chromicised catgut. With some difficulty, owing to the movements of respiration, the liver was then sewed to the opening in the diaphragm. The abscess cavity was then located by means of an aspirator needle and opened freely, about 500 c.c. of yellow pus escaping. The cavity was curetted and packed with iodoform gauze. The subsequent treatment consisted of a daily washing and packing. *Amoebae coli* were found in the pus. The abscess matter contained only a few leucocytes, red cells, broken down liver cells, free fat and serum. The patient made a good recovery from the operation, but the temperature remained high, and on Sept. 10th, ether was again administered and during the primary stage of anesthesia, three more abscesses were found and evacuated, the amount of pus being about 700 c.c. Death occurred five hours after this operation. At the autopsy, besides the four cavities already opened, numerous other abscesses were found scattered through the right lobe of the liver. The colon showed the usual results of ulceration and proliferation seen in dysentery. From the anus upwards for quite a distance it could be seen that a reparative process was going on, thus demonstrating the benefit derived from rectal lavage and showing its extent.

CASE 3.—F. F. B., 6th Inf., aged 35, entered the medical side of the hospital sometime in Aug., 1900, and was transferred to the surgical side on Sept. 20th, with a diagnosis of abscess of the liver. He gave a history of recurrent attacks of dysentery, the first one being in May, 1900. For this attack he had been in bed six weeks. For some four weeks he had been having pain on the right side in the region of the liver. At this time he was much emaciated, his weight being 138, and his present weight being 98 lbs. He was a man of education, and his natural disposition was cheerful, but now he was peevish and complaining. Pulse 118, temp. 101° F. *Amoebae* found in stools.

Operation. The anterior incision was made and the liver stitched to the abdominal wall without difficulty. Four abscess cavities containing about 1100 c.c. of reddish yellow pus were found and evacuated. The cavities were carefully curetted and packed with sterile gauze. The dysentery was treated with rectal injections of quinine solution, 1 to 1000. The abscess cavities were washed out and packed each day. On Sept. 23rd, the

cavities were clean and doing well. Dysentery obstinate. On Sept. 28th, the cavities were much smaller, but the dysentery was worse. On the 29th, at 6 P.M., the patient died. At the autopsy the abscess cavities were found to be smaller and apparently healing. Two more abscesses, each about the size of an English walnut were found in the right lobe of the liver. The whole interior surface of the colon was a mass of ulcers. One area was gangrenous. Other organs showed effects of toxæmia.

CASE 4.—E. F. 19th Inf., aged 25, was admitted to the hospital with a diagnosis of abscess of the liver. He had been brought a distance of ninety miles and was very weak. He had been in hospital with dysentery for one month, and had lost a great deal of flesh. Previous attacks in March and June 1900. Pain in right side over liver area for one month. Operation on Sept. 25th. Anterior incision. Abscess cavity about 3 cm. from surface of liver. Contents 500 c.c. *Amoebæ coli* found in large numbers in the pus. Sept. 30th pulse 120, temp. 102° F. Pain still present in region of liver. Patient anesthetized and another abscess evacuated through the same opening. At this time I was obliged to leave for Manila and was absent until Oct. 17th. In the meantime the patient was operated upon again by Dr. Caldwell, the surgeon in charge of the hospital. When I returned the patient was delirious and much exhausted. Temp. 103°, pulse 145. The symptoms of dysentery were very urgent, and death soon occurred. The autopsy revealed multiple abscess of the right lobe. The left lobe was adherent to the stomach, and contained a large abscess. Colon full of ulcerations. Other organs showed signs of a profound toxæmia.

CASE 5.—M. Mc. G., 19th Inf., aged 23, was admitted to hospital on Sept. 24th, for malaria. He had had several chills followed by a slight rise in temperature. General condition fairly good. Had dysentery in March 1900. Pain in region of liver. Liver a good deal enlarged. By aspiration through space between the eighth and ninth ribs an abscess was evacuated. *Amoebæ coli* found in contents of abscess. Blood count gave red corpuscles 3,100,000, white 9,000. Sept. 30th, the blood count showed red corpuscles 4,000,000, white 6,000. Oct. 31st, the patient was discharged well.

CASE 6.—F. C. 26th Inf., aged 21, was admitted to the medical ward in Sept. with acute dysentery, having about thirty stools per day. On Oct. 24th, he was transferred to the surgical ward with a diagnosis of general peritonitis and empyema of the right side. The liver was found to be enlarged, extending two

inches below the costal border, but there was no bulging. Operation for abscess of liver by the anterior route. The liver surface was slightly adherent to the abdominal wall. An abscess containing 600 c.c. was evacuated and the cavity curetted gently. In doing this the curette suddenly went in up to the end of the handle. Examination showed that it had broken into another cavity which was apparently empty. By further exploration it was determined that this second abscess had discharged itself either into the bowel or the peritoneal cavity. Both cavities were drained with iodoform gauze. The patient's temperature at this time was 102° F., pulse 110, resp. 26. He was having six stools a day of bloody matter, in spite of the enterolysis, in which a solution of quinine, 1 to 1000, was used. In twelve hours the temperature dropped to normal. The stools examined showed amoebae, blood and free fat globules. Abscess contents also showed amoebae but not in large numbers. On the evening of the 26th, the patient had a chill and the temperature shot up to 102° F, with a pulse of 150, and a respiration rate of 40. This was followed by a drop of temperature at 9 A.M. on the 27th to 97° F., with a pulse of 104, and respirations 28. On account of the presence of free fat in the stools it was concluded that the abscess had broken into the intestines, and it was thought that by introducing a No. 16 F catheter through the abdominal wound and through the liver into the intestine it might be possible to irrigate the colon very thoroughly. This was done for the following six days and the result was a marked decrease in the number of stools and in the amount of blood passed. On the 28th, the patient had another chill followed by a rise in temperature and by an intense pain in the right side, in the axillary line, over the upper border of the liver. Under ether two inches of the 8th and 9th ribs were removed. An intense pleurisy was found but no pus in the pleural cavity. The pleura and diaphragm were incised and stitched together around the opening as in other operations of this character. There was some difficulty in sewing the liver to the edges of the opening on account of the extreme friability of the liver tissue and the deep respirations of the patient, but this difficulty was finally overcome. A large abscess was found in the liver, opened, scraped and packed. On the night of the 29th, another chill occurred. An examination of the blood was then made for malarial organisms and none found. Signs of peritonitis, pain, tympanites, etc., led to an exploratory abdominal section. A severe local peritonitis was found, the intestines being matted together under the liver, but no free pus appeared. The patient recovered from this operation very well, although he remained extreme-

ly weak. He was given an intravenous injection of normal salt solution at a temperature of 110° in the bottle, on the 29th, and again on the 30th. His temperature then was 100° F., and his pulse 120. On the 31st another chill. Liver explored and two more abscesses found and evacuated. Another two quarts of salt solution injected into the veins. On Nov. 1st, the temperature was 100° F. That afternoon a slight chill occurred, but patient said he felt better. Nov. 2nd, temperature normal, pulse 112, respiration 26. Patient had taken his nourishment well and there was no nausea to speak of, but he was much exhausted. That night the record was temperature 102°, pulse 148, respirations 26. Patient was extremely restless and complained of pain all over the liver region, and on the right side of the chest. Examination of liver without anesthesia revealed nothing new. More salt solution was given, but the temperature kept on rising, and death occurred on Nov. 3rd. At the autopsy an acute pleurisy of the right side was found with some involvement of lung tissue. The liver was rather large and was literally packed full of abscesses of different sizes. One abscess had perforated the intestines and the catheter which had been introduced lay well down in the gut. All around that opening the intestines were agglutinated, and there was a marked local peritonitis in that vicinity, but the general peritoneal cavity was not infected. The spleen was softened, the kidneys slightly enlarged and the cortex greyish in color. The mucous membrane of the colon showed healing ulcers throughout its whole extent and a general appearance of regeneration.

CASE 7.—H. B., 18th Inf., aged 27, was admitted to hospital Nov. 16th, with acute dysentery, having from twelve to twenty stools per day. He was supposed also to have acute pleurisy, and examination showed some fluid in the right pleural cavity. By means of an aspirator needle about 200 c.c. of matter was withdrawn. Examination of this matter with the microscope showed liver cells in various stages of disintegration, a few red and white blood corpuscles, and a large amount of free fat. There was no pain over the region of the liver. The patient's condition did not admit of further operative procedures and on the following day he died. The autopsy showed acute dysenteric ulcerations of the colon, and multiple abscess of the liver, the number of cavities found being thirty, one of which, by far the largest, had broken into the pleural cavity. The rest varied in size from the size of an English walnut to that of a pea, giving the cut surface of the liver a "polka dot" appearance.

CASE 8.—A. S., 6th Inf., aged 38. Admitted to hospital Dec. 4th. He was about six feet tall and fairly well nourished. Had had dysentery for about two months, this being his second attack. He had noticed a slight swelling at the right anterior border of the ribs two weeks before. This had given him no trouble until a week before when he observed that it hurt him to press on that part of the body. Temperature 99° F., pulse 78. Diagnosis, abscess of the liver. Operation Dec. 16th. Anterior incision. Liver stitched to the abdominal wall without difficulty. About 600 c.c. of matter evacuated. Cavity curetted and packed with iodoform gauze. On Dec. 8th the dressings were still saturated with bile. The temperature rose to 103°, and the pulse to 110, but that same evening fell to 99°, and 80. On Dec. 9th, the dressings were still saturated with bile. After this the patient made constant improvement. On the 6th of Jan. the bile coloring disappeared from the discharge. On Jan. 24th, the patient was discharged to duty with wound completely healed. No amoebae were found in the pus.

CASE 9.—A. S., 18th Inf., aged 18. Admitted to hospital Jan. 11, 1901, with a diagnosis of acute diarrhoea and malaria. He gave a history of having had bloody stools up to two days before entering the hospital, and complained of indefinite pains on the right side. Had had chilly sensations off and on. Temperature 99°, pulse 80. General condition fairly good, but there had evidently been considerable loss of weight. Abdominal examination revealed nothing. Chest clear, no friction sounds or rales. Liver not enlarged. No plasmodia malariae in blood. On Jan. 13th, patient had a chill followed by a temperature of 103°, and pulse of 120. Blood again examined and no plasmodia found. Owing to the negative examination for malaria, the history of dysentery, and the present symptoms of chills, pain and fever, the diagnosis of liver abscess was made and an operation decided upon. On Jan. 16th, the ninth rib was resected in the mid axillary line, and the liver sutured to the opening in the manner before described. Pus was found by the aspirator needle, the liver opened with the knife and 700 c.c. of pus evacuated. Cavity well curetted and packed with iodoform gauze. Scrapings from the cavity showed amoebae coli in abundance. In the pus were found numerous bacilli and diplococci. The case terminated in recovery.

CASE 10.—A. Van D., 26th Inf., aged 21. Sent to hospital on Jan. 21st, for acute pneumonia. He had a good deal of cough and raised profusely a thick brownish red matter. Temp. 102°, pulse 110, resp. 34. He had lost about thirty lbs. of flesh in past

two months. Had had dysentery for three months, and complained of indefinite pains in the right side. Surface over liver painful on pressure. Examination of sputa showed red and white blood corpuscles, a large amount of cell detritus, and much free fat. Diagnosis, multiple abscess of liver with perforation of diaphragm and discharge through the lung. On account of the patient's continued weakness and the other symptoms it was decided to explore the liver. This was done by the anterior incision. The liver was sutured to the abdominal wound with some difficulty. A large, irregular abscess was evacuated and treated in the usual way. After the operation the temp. was 101°, pulse 120, resp. 34. The operation did not seem to give much relief to the symptoms, and hence on the following day the liver was explored again, this time with the finger. The liver tissue was very soft and a good deal of hemorrhage took place, which, however, was controlled by packing the cavity with gauze. Patient died on the following day. No autopsy. Amoebae found in contents of abscess.

CASE 11.—C. K. H., Bat, 1, 6th Art., aged 32. Admitted Jan. 30th to medical side of hospital with a diagnosis of acute dysentery. During the previous twelve months he had had three attacks of dysentery. At time of admission to hospital he was having from four to six bloody stools a day accompanied by severe tenesmus after the movement. He was much emaciated, having lost some thirty pounds in the past year. Very anaemic. Blood count, red 2,500,000, white 7,000. Temp. 103°, pulse 104. Liver enlarged, the edge being felt for two finger breadths below the costal border. There was soreness, also, over the liver area. On Feb. 1st, the patient was transferred to the surgical side of the hospital, the liver was aspirated and no pus found. It was decided however, to operate for abscess of liver. Anterior incision made about two and a half inches in length along the margin of the ribs. On opening the abdomen the liver edge protruded into the wound. The lower part of the wound was packed with gauze to protect the peritoneal cavity and the liver edge, which was freely moveable, stitched to the opening. Liver incised with scalpel for a depth of one inch and no pus found. The aspirator needle was then used with a negative result. Being certain, however, that there were abscesses, I continued the search, using the finger and penetrating the liver tissue freely. There was some bleeding of the character of a venous oozing, but not excessive. After a search of half an hour, during which the liver had been penetrated seemingly in all directions, to the full length of the finger, I was rewarded by breaking into an abscess, which was very long

and narrow, extending longitudinally across, the liver from left to right, about one inch broad at the beginning, but widening out towards the lower angle. About 200 c.c. of pus evacuated. The patient's condition, while not very good, was fair, but he took the ether badly, and his respiration was labored. The liver at the wound opening tore away from its stitches. At this juncture it was decided to draw up the hepatic flexure of the colon, which was lying very close to the lower angle of the abdominal wound, stitch it there, perforate it, and insert a catheter for irrigation. This was done, and a No. 15 F catheter used. The patient was given eight quarts of salt solution by the rectum, and two quarts into vein in right arm. He made a good recovery from the operation. On the third day after the operation, the abscess cavity and the bowel having been irrigated with salt solution twice a day, the blood in the stools entirely disappeared. The opening in the gut was then closed with Lembert sutures, and healed nicely. On the 5th and 8th days of Feb. three more abscesses were found through the original incision, the exploration being done as before with the finger. One of the abscesses was in the left lobe of the liver. At times the dressings were covered with bile. The patient improved steadily, began to take on flesh and was discharged well on April 2nd, 1901.

CASE 12.—C. I., Band, 26th Inf., aged 21. Admitted to hospital on March 5th with a diagnosis of recurrent dysentery. He had three attacks of dysentery in the previous twelve months, from which he had apparently recovered. On March 15th, he was transferred to the surgical side. Abscess of the liver was then suspected. Patient very weak and much emaciated. He said that he had no pain anywhere, and was very anxious to go home with his regiment which was soon to sail. Examination showed liver slightly enlarged and extending below the costal border. Liver aspirated under cocaine and no pus found. Patient collapsed under cocaine and was resuscitated with some difficulty by means of heat and stimulants. Temp. 103°, pulse 100. At an operation later under chloroform (no ether could be obtained) two and one half inches of the 8th rib was resected. Pleura and diaphragm incised and sewed to wound. Diaphragm incised and sewed to liver. Liver incised with Pacquelin's thermo cautery. After some search with the finger two distinct abscesses were found, emptied, curetted and packed. Amoebae found in stools and in abscess contents, curettings included. Two days later, the symptoms not having improved, (temp. 103°, pulse 125) except that the dysentery had apparently subsided, the patient was chloroformed, and the abdomen opened by another incision along the

lower border of the ribs. Two more abscesses found in the right lobe and one in the left. Connection made through liver to first opening. Two days after this two more abscesses were found and evacuated. The patient seemed to improve somewhat for one week. Then the symptoms returned. Under the use of chloroform in the previous operations the patient had collapsed each time, and it was with a great deal of difficulty that by artificial respiration, inversion of the body and stimulation he was resuscitated. With the recurrence of the symptoms it was deemed unwise to give an anesthetic, and an operation was undertaken without chloroform; but the condition of the patient called a halt in the proceedings. Death occurred twelve hours later. The autopsy showed the liver filled with abscesses, there being some twenty of them, two of which were in the left lobe.

CASE 13.—J. R., 19th Inf., aged 25. Sent to hospital (surgical side) on March 28th, with a diagnosis of empyema. He denied ever having had dysentery, but said that he had a slight attack of diarrhoea in Feb. of that year. Liver extends two fingers breadth below the costal border. Thorax clear of friction sounds and normal on percussion. Some pain on right side of an indefinite character, and some tenderness over the liver. Temp. 101°, pulse 88, resp. 34. Operation by anterior incision. Liver sewed to abdominal wound, and incised with knife. Two moderate sized abscesses evacuated near the surface. Examination of pus showed no amoebae, but a large number of bacilli resembling the colon bacilli, which they probably were. That night the patient had five large hemorrhages from the bowels from which he died. Autopsy showed multiple abscess of the liver,—nine in all, and twelve scattered, deep ulcerations of the colon, with rounded edges, the high one being about 8 cm. from the caput. Spleen soft and large. Kidneys large (cloudy swelling), capsule adherent. Just before death a troublesome tympanites came on and resisted all measures for relief.

CASE 14.—N. P. 19th. Inf., aged 32. This patient was transferred from a small post hospital about ninety miles away to the department hospital with a diagnosis of convalescence from typhoid fever. He walked to the hospital from the boat by which he had come, a distance of about one quarter of a mile. He said that he felt weak and had some pain in the right side, not severe, and that he had been sick for six weeks with some kind of fever. Six months before he had had the same kind of fever. He denied having had dysentery. He entered the medical side of the hospital on March 29th, and on April 1st, came under my observation. I found a moderate sized swelling in the hypo-

chondrium, with pain, or rather exquisite tenderness, on compressing the liver. Diagnosis, abscess of the liver. Operation the same day by anterior incision. A large abscess was found extending nearly from the anterior to the posterior surface of the liver, and containing about three pints of pus. Colon bacilli and a few staphylococci were found in the pus, but no amoebae. The patient's condition was so poor before the operation that hypodermatic injections of whiskey and strychnia were required. Death took place from shock two hours after the operation. The autopsy disclosed two other large abscesses lying side by side in the liver, each containing about a pint of pus. Both kidneys were enlarged and presented evidences of nephritis and of purulent pyelitis. The whole length of the colon showed partially healed ulcerations. The ileum showed cicatrices of ulcerations of Peyer's patches for about two feet from the ileo-caecal valve.

CASE 15.—H. J. J., 18th Inf., aged 35. Entered surgical side of hospital on April 5th, 1901, with a diagnosis of pleurisy. He had been in the islands about three months. In Feb. of that year he had dysentery. At time of admission he complained of pain in right side and back, about in the lines of the third and fourth ribs. Temp. 101°, pulse 88, resp. 28. Aspiration of liver showed pus in posterior part of right lobe. At the operation two inches of the 8th and 9th ribs were removed. Liver free. Gauze packed around the opening and liver not sewed to the wound. Two moderate sized abscesses found and evacuated. Cavities curetted and packed. A few non moving bodies similar to amoebae found in the pus. For about twenty-four hours after operation patient had a severe tympanites which did not yield readily to relief measures. On the 5th day the gauze packing was removed. The issue of this case was complete recovery.

CASE 16.—J. J. G., 26th Inf., aged 31. This man was sent to the hospital for two reasons: first, to give him a chance to recover from an attack of delirium tremens, and secondly for pain in the right side over the liver. He had had dysentery twice during the previous year. On examination the liver was found to be enlarged, the margin extending down for about one finger's breadth below the costal border. A diagnosis of liver abscess was made, and that organ aspirated very carefully twelve times, but no pus was found. The liver tissue seemed more resistant than usual; and this fact, taken with the failure to find pus, and the man's intemperate habits, led to the conclusion that he was suffering from cirrhosis of the liver in its hypertrophic form, rather than from abscess. It should be said also that he had had occasional attacks of jaundice. A few days after this

the symptoms led me to aspirate again, and this time about 200 c.c. of pus was obtained, proving that my first conclusion was the correct one. The pain in the side soon subsided, and the man was sent to duty in one week.

REMARKS.

In this series of sixteen cases there were seven recoveries and nine deaths. The percentage of mortality is very high, but it can be easily accounted for. In eight of the fatal cases an autopsy was made and revealed conditions which could not have been discovered beforehand, and which rendered a fatal result certain. In some of them the operation gave a measure of relief to the symptoms, but could do no more. It may be safely assumed that without surgical attention all these patients would have died. In a few of the non fatal cases a spontaneous discharge of the abscesses might, under favorable circumstances, have occurred, leading to the recovery of the patient. But the circumstances in the Islands were not favorable; the patients were, almost without exception, emaciated and weak; the tendency of the dysentery was to recur, and of the suppurative process to spread, making the chances of a spontaneous recovery very small. It may, therefore, be rightly claimed that in this series of operations seven lives were saved and none sacrificed.

Not more than six of these cases entered the surgical ward of the hospital with a correct diagnosis. In two of them the abscess was only suspected. In the other cases there was a wide range of diagnosis, embracing appendicitis, malaria (accounting for the chills), acute pleurisy, acute pneumonia, peritonitis, empyema, convalescence from typhoid fever, and delirium tremens with pain in the side. Gall stones, with or without suppurative cholecystitis, were apparently not thought of in connection with these cases, probably because the severe pain which usually accompanies this affection was absent.

Abscess of the liver is a very rare affection in northern latitudes, and the literature of our ordinary books of reference is meager in regard to it: hence it is not strange that such very reasonable errors of diagnosis should be made by those who had had little or no experience in the treatment of tropical diseases. After a while the surgeons became more familiar with this common sequel of

tropical dysentery so that they were on the lookout for it and made the diagnosis more readily. These errors in diagnosis, together with the total failure in all the cases to recognize the disease in its early stages account, in a large measure, for the high rate of mortality. A prompt recognition of the complication and appropriate treatment might have enabled us to make a different showing.

A systematic blood count to determine the presence or absence of leucocytosis could not be made owing to the lack of apparatus. In two cases a count was made with borrowed apparatus which was not available at other times. In these cases, as may have been observed, anaemia was shown, but no leucocytosis.

It is seen that in a majority of the cases, dysentery was a concomitant affection. In those cases where there was no dysentery recovery followed. In all the cases there were emaciation and debility, and these were prominent factors in the fatality, or rather in the production of the conditions which rendered a fatal result more likely to happen. The loss of flesh and great weakness were due of course, to the long drain upon the system both of the dysentery and of the unrecognized abscess, together with the depressing effects of the tropical climate.

In thirty two autopsies made on the bodies of those whose death had been ascribed to dysentery abscess of the liver was found in five. In one case the liver was so filled with abscesses, varying in size from the size of a pin's head to that a pecan nut, that the cut surface of the right lobe gave the appearance of a "polka dot" piece of yellow brown cloth. A similar appearance was noted in one of the cases operated on, as has been stated.

These so called abscesses of the liver are not true abscesses, nor are their contents pus. They are rather areas of necrosis, or liquifaction of the liver tissue, and their contents are made up of liver cells in all stages of degeneration and disintegration, free fat globules, more or less of blood corpuscles and serum. In this paper the terms abscess and pus are used for convenience. An examination, such as was possible with our imperfect outfit, was made in all the cases of the contents of the abscesses. Amoebae were found in eight of the cases. In some of these they were not

discovered until the scrapings of the abscess walls had been examined. In the cases of long standing single abscesses followed by recovery amoebae were not found. In all the cases where there was concomitant dysentery amoebae were found in the stools. In all cases except the first it was made a practice to curette the walls of the abscess before packing, the object being to remove as much of the infected tissue as possible. The scraping was done very carefully with a sharp curette.

Finding an abscess in these cases is often a matter of luck, for unless there is a localized swelling of the liver surface there is no way of locating the pus except by the aspirator, and this sometimes fails even in cases where an abscess is afterwards found on section.

In making a diagnosis of abscess of the liver the previous history of the patient is of the utmost importance. If a patient gives a history of having had dysentery of a tropical, or amoebic type; if he has an indefinite pain, or a sensitive feeling over the liver area, manifested on compressing the ribs on the right side; if he has chills, or chilliness, and more or less of fever, similar to that of septic infection, abscess of the liver may be suspected, whether or not the liver shows signs of enlargement. When dysentery is coexistent with the symptoms above mentioned it is almost certain that an abscess exists. Aspiration may be an aid to the diagnosis, but it is by no means a certain one. The liver may be punctured a number of times without obtaining pus, and afterwards on operation an abscess may be found, as has been stated above. It is a good plan, however, after a patient is anesthetized to aspirate, for if pus is found the needle is a good guide to its locality, and if it is not found no harm has been done. Aspiration under cocaine proved in one of my cases to be an unpleasant and indeed somewhat dangerous proceeding. It is not, in my opinion, to be advised in these cases, for as a rule the patient's condition is too poor to stand much of the depressing effect of the drug.

When the diagnosis of abscess of the liver is made, or even strongly suspected, immediate operation is demanded. As a rule the abscess can be found, but if it is not some benefit may perhaps

be derived from the incision itself. I operated on one case, after my return from the Philippines, in which the diagnosis appeared to be clearly made out, all the symptoms being present, together with amoebic dysentery, in which the result seemed to sustain this theory. The operation was through the thoracic wall, liver stitched to opening. After searching through the softened liver tissue with the aspirator, and later with the finger no pus was discovered. A small packing of sterile gauze was placed in the wound and the opening closed all but the lower edge where the drain was placed. The gauze was taken out in twenty-four hours. The patient's symptoms immediately began to mend, and he made an uninterrupted recovery. There has been no recurrence. Is it not possible that there was an abscess which I did not succeed in finding, and that the hepatotomy stimulated the liver to absorb the pus thus leading to the recovery of the patient?

One interesting fact brought out by these operations is the demonstration of the freedom with which one may search through the liver tissue without dangerous hemorrhage. The search should be made by the finger rather than by any sharp or steel instrument. The finger seems to slip over the arteries and large veins without rupturing them. Manson lays stress upon the danger from hemorrhage in exploring the liver, and speaks of the great friability of the liver tissue making it extremely difficult to sew the liver to the wound. Neither of these troubles did I experience to any great extent.

It is my opinion that no abscess, whether bulging or not, should be evacuated and drained by means of the trocar and canula as suggested by Manson. There may be adhesions of the liver to the wall and there may not be. Most likely they do not exist. One cannot be sure in any case, and the risk is run of infecting the thoracic or abdominal cavity if this method is followed. The operation by incision is surer and safer, and the shock to the patient is not greater, except in extreme cases, and in these the quickest method is the best.

Osler, in an article in the Medical News, of April 12th, 1902, speaks of a diffuse cyanosis as present in cases of abscess of the liver. This symptom was present in so many of the poorly nour-

ished soldiers suffering from a variety of diseases, especially recurrent dysentery, with or without abscess, that it did not seem at that time to be particularly diagnostic of abscess. He also speaks of the swelling noticed at the costal border. This swelling appeared in only a few of my cases, and was generally in the single abscess type, which almost invariably was followed by recovery. In this type of case there were no chills, but with the multiple abscess type with dysentery, chills and irregular fever were always present. In two of the cases where there was dysentery the colon was entered and irrigated. In one of these cases the great benefit derived from the irrigation was shown on autopsy, and in the other a cure was effected by this procedure.

In my opinion this is the best method of treating those obstinate cases of recurrent dysentery which so often baffle medical skill. The most practicable way to accomplish the end is to perform right inguinal colotomy, as recommended by Bolton. It is my belief that a large number of lives might have been saved in the Philippines during the late war had this surgical treatment been adopted. As it was the antagonism of the great majority of our medical men to the introduction of surgical methods in the treatment of a disease which had hitherto been considered as belonging especially to the province of the physician was too strong to be overcome. It is to be hoped that by this time a different spirit prevails among them, and that when necessary the surgeon is promptly called upon to aid in the treatment of the dread tropical disease which we are considering. When the attacks of dysentery have been stopped and the ulcerations of the bowel healed, then the danger from that extremely fatal complication, abscess of the liver, will have been greatly lessened.

Contemporary Comment.

A GERMAN VIEW OF THE AMERICAN ARMY MEDICAL SCHOOL, LIBRARY AND MUSEUM.*

By STAFF SURGEON DR. EHRLICH,
OF GIESSEN.

WHEN, during my stay in Washington, General O'Reilly in his amiable manner detailed two medical officers of the American Army to show me through the Medical Museum and its adjunct the Army Medical School, I expected to find something similar to our "Kaiser Wilhelm Akademie," though perhaps on a smaller scale.

But what I actually saw proved to be totally different from the conception I had formed. The Museum, with its collections, and its Library, is designed not only for the instruction and information of the Army Medical Corps and the students of the school, but is, in effect, a public institution open to everybody, under the direction of the Surgeon General of the Army. The only parts not open to the public are the rooms of the School and (of course) the depot for army medical supplies in the cellar.

The simple red brick building stands at the south-east end of the so-called "Smithsonian Grounds," a beautiful stretch of park, in which the National Museum and the Smithsonian Institution, a museum for all branches of science, are situated.

The Army Medical Museum comprises several divisions, which are under the direction of medical officers detailed for that purpose.

Here one finds along with the arms and utensils of savage and semi-civilized man, many rare pathological preparations of

*Translated from the "Deutsche Militärärztliche Zeitschrift, (July, 1904, p. 396 *et seq.*) by Dr. F. H. Garrison, Assistant Librarian, Army Medical Library.

man and the lower animals. Entire skeletons of animals of all kinds and sizes are exhibited, as well as stuffed specimens; serial sections of organs are displayed comprehensively between plates of glass, to give the spectator an idea of their growth and structure. So too, there are large numbers of sections and wax models in the field of embryology. Especially fine are the ground cross sections of skeletal bones, human and comparative. The preparations of tropical diseases also awaken lively interest, but are unfortunately bleached out by being kept in alcohol, and have lost their natural colors. I called the attention of the pathologist to the methods employed in Germany (e. g. Kaiserling's method) of preserving specimens in saline solutions, which, it seems, are not generally known of in America. There are also many well executed wax models of different diseases of the skin and viscera. While these, from a scientific point of view, may be designated as really excellent reproductions, yet, when taken in conjunction with the life size wax figures of hospital corps men in different uniforms, they remind one somewhat of a "Panopticon." In like manner there is a collection (almost complete, as the officer in charge assured me), which is mainly of historical interest, namely, the collection of all the medals and memorial coins which have ever been struck off in connection with medicine. Here one sees all possible coins, from those of ancient Rome with heads of emperors and the inscription "Pro salute," up to medals of the most modern Medical Congresses.

These exhibits, as, in fact, all smaller objects in the Museum are displayed in a very practical manner between plates of glass, which are arranged circle-wise around an axis, where they may be revolved at will.

The most complete and valuable collection is decidedly that of the microscopes. It embraces the earliest forms—curiously shaped tubes, made of wood and covered with leather and gilt paper, which the old investigators, with much skill and labor, made with their own hands—as well as the most complete modern instruments of Zeiss and others.

The more valuable specimens, especially the old ones, are purchased by order of the medical division, there being a liberal

fund for that purpose; but many are gathered and presented by medical officers traveling abroad or stationed in the Philippines and other remote parts. The pathological preparations are almost all presented by the medical officers. Even in the instructions for the Medical Corps there are exact directions for the preparation and packing of specimens intended for the Museum.

Adjoining the Museum is the pride of the American Army Medical Corps, viz., its Library. This truly imposing and extensive collection of books is distributed in three large rooms with many tall frame-works for shelving. These rooms open into a rotunda-like place two stories high, which serves as a hall for reading and study. The walls are adorned with portraits of distinguished medical officers and teachers, and the room itself is provided with large tables and comfortable seats. The Library seemed to be zealously utilized, and indeed among the spectacled old gentlemen whom I saw eagerly perusing certain portly volumes, there were several ladies, who were making extracts from journals.

The collection of books, inclusive of pamphlets, comprises half a million volumes. These are mostly modern works, the direction not setting much store by old manuscripts. The collection of the former, therefore is almost complete. The Librarian told me that he was in touch with booksellers in Leipzig, London, Paris, and other centres of the book-trade, who were directed to send in all new or rare books. There is only one other library in the world which can compete with this one in rank and in its collection of rare and costly works, namely, the British Museum.

The officer showed me with considerable pleasure and satisfaction the nine or ten volumes of the second series of the catalogue. The original edition of 16 stout folio volumes proved to be no longer adequate for the continual growth of the Library. It is very comprehensive and convenient not only as to names and works, but also arranged by subjects, giving individual diseases and their treatment. Along with medical works proper, the Library also subscribes to all known medical periodicals of importance in whatever language.

With a feeling of genuine astonishment I took leave of the Library and followed my courteous guide into that part of the building from which the public is excluded. The Army Medical School with its many laboratories and work rooms, all of them, especially the microscopic room handsome and bright, differs in no wise from our modern scientific institutions. Its appointments are adequate to all the demands of modern science.

I will give a more detailed account of this establishment, as the reader is no doubt prepared to assume an institution similar to our "Kaiser Wilhelm Akademie." This is, however, not the case.

The American Army Medical Corps is recruited from graduated, licensed physicians, who have to undergo a very severe and searching examination as to their physical as well as their general and special scientific knowledge. Those admitted are ordered as soon as possible, usually in the first year, to a 5 or 6 months course at the Army Medical School. In addition, all medical officers stationed at Washington or the vicinity can participate as voluntary students in these courses of instruction. To the same end, leave is willingly granted in the case of a medical officer who has served for a long period of time on the frontier or in the Philippines.

The students wear uniforms during the hours of instruction and a strict eye is kept upon them.

At the end of the course there is a close examination, followed by a distribution of prizes, usually in the great hall of the adjoining National Museum. On this occasion appear the Secretary of War, the Commanding General of the Army and the heads of authority. The Secretary of War himself distributes the diplomas and prizes, then follow addresses to the graduates by the Surgeon General and the General of the Army. The same custom obtains in the other military schools, e. g., the War College, the Cavalry School, etc.

The Faculty of the Army Medical School consists of medical officers stationed at Washington, who, without regard to their military rank, give instruction in their special branches. They are usually however older medical officers from the rank of Major

up. The members of the Faculty have, along with their military rank, the title of "Professor" of their given specialty, the senior in rank bearing the title "President."

The course of instruction embraces lectures and practical exercises in administration in peace and war, military surgery and field service, military hygiene, internal medicine, clinical and hygienic microscopy, pathological histology and bacteriology, skin and venereal diseases, instruction in the formations of the hospital corps with tactical exercises, and finally instruction in riding. To these are added lectures on non-medical subjects voluntarily given by special authorities at the invitation of the Surgeon General. For example, lectures by the Judge Advocate General of the Army on medical jurisprudence, military law, and courts martial, as well as lectures by a member of the Agricultural Department on the parasites of man.

I then proceeded to the inspection of what, for a medical officer, was the most interesting part of the building, the cellar. Here, as I have said, is the depot of medical supplies for the Army.

Everything I saw there was good and very practical, if sometimes too costly and elegant for large armies and mostly adapted only for the peculiar American conditions. For example, there are regimental field hospitals consisting of 12 beds each for the volunteer regiments, who always want their wounded near them and to whom, as General O'Reilly informed me, these concessions must be granted, as they are the only reserve forces of the standing army. The regiments in themselves are also much weaker in complement of men than ours and for this reason the tactical unit for the field equipment is not the battalion but the regiment. But it would carry me too far to go into all these details, and I propose to describe the field service in another paper.

For the present, let me mention briefly that in addition to a medicine chest, there is allotted to each regiment a surgical chest, a sterilizer chest with sterilization apparatus, disinfectants, brushes, rubber gloves, Berkefeld filters, etc., a reserve box of surgical dressings and a Maignen filter.

All the receptacles are about the size of our medicine chests, with brass mountings, and a very practical mode of closure by

means of a lock in the middle and two clasps at the sides, which are held fast by springs. In addition they have a covering of sail cloth, and a contrivance by means of which two chests can be loaded upon one animal for transportation, when necessary. For this reason the chests are very light and tightly packed. The medicines are as far as possible in tablet form which are packed in containers, *which are of the same size for fluid medicines*. The cubical shape and equal size of the tins greatly facilitates their packing. The screw cover of the tins is practical, with a lever for the finger to facilitate opening.

The litter consists of two wooden poles with metal feet and sail-cloth cover and two transverse rods of thin metal with a hinge in the middle. The litter can thus be folded lengthwise in transportation and the cloth rolled around it. In the equipment of the hospital corps, I was especially pleased with the bed for field hospitals. It is made of thin, but strong wooden pieces provided with hinges, so that the whole can be folded together, and with all its appointments—empty bed-sack, linen and mosquito netting—weighs about 20 pounds. Packed together it does not take up more space than the above litter when packed. The bedding of the field hospitals is packed in bales the size of a medicine chest, with sail-cloth covering, and containing bed and body linen for 6 to 12 men, with a thick rubber sheet for each tent. This rubber sheet is spread out on the ground and the shelter for the wounded is made over it.

Very appropriate too are mess-chests with table ware for 60 to 80 men, including plates, cups, knives, forks, spoons, a machine for cutting meat, cooking utensils, etc. The cups and plates are made of thin enamelled metal, and are packed tightly together for economy of space. These chests are also light and not larger than an ordinary trunk. Interesting to see were the chests for field hospitals containing an outfit for acetylene lighting.

The equipment of the personnel consists of flat pouches of quadrangular form, which contain in three compartments, instruments, medicine and bandaging material. The pouches of the privates have an outfit similar to our own, those of the non-com-

missioned officers, contain an emergency case and medicines. In addition, each medical officer has an orderly detailed, a hospital corps man, who carries a large pouch with instruments, bandaging material, chloroform, etc. All pouches are carried by straps across the left shoulder. The inner arrangement of the emergency cases was not satisfactory, inasmuch as the fasteners of the compartment for instruments would by continued pressure break the glass ware. The officers also complained that the Surgeon's field case struck against them in riding. This is the fault of the American uniform coat, which is worn as a jacket without waist or rear buttons. When I remarked that, with us, cartridge boxes are fastened simply to the back buttons at the waist of the coat, my companions had to laugh heartily because they had not hit upon that simple expedient before.

Finally I inspected the historical part of the depot, where I was particularly struck with an instrument chest with metal compartments devised by Senn, the packing of which is said, however, to be lengthy and difficult; and an old wooden chest which had been used in the war of 1862. The latter contains the greatest curiosity of the depot, viz. a tin chloroform flask with a soldered top, which was still full, a sufficient guarantee of the excellence of the stopper. From other flasks in the same chest I could convince myself as to the exact amount of usage.

When after a very detailed inspection of the supply depot, I took leave of my attractive companions, I was able to assure them with a good conscience that I had seen and learned much that was new and practical.

TUBERCULOSIS STATISTICS OF THE KRISTIANIA MILITARY HOSPITAL.

IN the *Norsk Tidsskrift for Militærmedicin*, Captain Thrap Meyer reports that tuberculosis is on the increase among the military forces in Kristiania. There were admitted to the military hospital in that city three times as many cases in 1903 as in 1899.—HANS DAAE.



The Russian Wounded at the Mukden Railway Station.—1904.

THE MEDICAL ORGANIZATION OF THE RUSSIAN ARMY.*

BY LIEUTENANT COLONEL FRANK HOWARD, A.M.S.
OF LONDON.

THE Russian Medical Service† is organized on the system of dual control, there being a military governor in every large hospital, who is the responsible head.

In peace there is no medical corps in the Russian army existing as an unit by itself. Each combatant unit has a small medical *personnel* belonging to it.

The medical establishment for an infantry regiment of 4 battalions is—

- 1 senior surgeon (surgeon major)
- 4 junior surgeons (assistant surgeons.)
- 1 senior dresser.
- 12 junior dressers.
- 1 apothecary.
- 14 dresser pupils.
- 1 hospital sergeant.
- 3 hospital orderlies.

All non-combatants.

Each unit has its own hospital, that of an infantry regiment numbering 16 beds. In addition, there are garrison hospitals for more severe cases in certain of the larger garrisons, with beds for from 150 to 800 men, and to these a medical *personnel* varying from 4 to 18 medical officers, with the necessary subordinate *personnel*, is attached.

From the above, as cadres, are formed all the medical units required on mobilization, the extra medical *personnel* being taken

*Furnished by the Second Division, General Staff, U.S.A., and reprinted from the "Handbook of the Medical Organizations of Foreign Armies. By Lieut. Colonel Frank Howard, A.M.S.," London, 1902.

†The total of the medical department of the Russian army is given as about 2,808 surgeons, 232 pharmacists, 3,804 dressers and 3,455 company squadron, or battery dressers, which represents the peace organization.

from the reserve, and the drivers supplied from the reserve of cavalry.

REGIMENTAL MEDICAL ESTABLISHMENTS.

Each unit in the field has a medical *personnel*, with the requisite stores and transport attached to it. Taking, for example, an infantry regiment, the medical *personnel* is the same as in, peace, except that there are 20 junior and company dressers, and no dresser pupils. The *materiel* comprises stores for a hospital of 16 beds, and, in addition, each dresser carries a dresser's knapsack for first aid, and 32 stretchers are provided. The medical transport consists of—

- 4 1-horse carts for medical stores.
- 1 2-horse wagon with stretchers.
- 4 4-horse ambulance wagons.

Six men per company are trained as stretcher bearers, and when so employed wear the Red Cross badge on their left arm, but otherwise take their places in the ranks.

The medical arrangements in other units are of a similar nature.

In action the regimental medical *personnel* form advanced dressing stations to which the wounded of the regiments are brought in, and in which their wounds are attended to and first aid applied.

When troops are halted, a regimental hospital is organized.

SANITARY DIVISIONS.

To each active or reserve infantry division in the field is attached a "sanitary division," which forms part of the divisional supply and transport column, and consists of—

- 1 divisional hospital.
- 2 mobile field hospitals.

The "divisional hospital" corresponds to the British "bearer company;" the "mobile hospital" to the "field hospital."

To each of the rifle brigades of the line is attached a brigade hospital, corresponding to the "divisional hospital" of an infantry division.

DIVISIONAL HOSPITALS.

The work of the divisional hospital in action is to form a main dressing station; to search for and bring in the wounded

from the field, or the advanced dressing stations, to it, and to co-operate with the troops, in despatching the wounded to the field hospitals told off to them. The main dressing station is marked by day by two flags (one national and one bearing the Red Cross) and at night by lanterns.

The composition of the divisional hospital is as follows:

- 1 divisional surgeon.
- 4 other surgeons.

Total 5 medical officers.

- 1 officer in charge of bearer company and hospital.
- 1 hospital overseer (official.)
- 3 dressers.
- 1 apothecary dresser.
- 1 veterinary dresser.
- 2 clerks.
- 22 hospital assistants.
- 2 transport under officers.
- 37 transport drivers.

Bearer company—

- 1 sergeant-major.
- 4 senior under officers.
- 12 junior under officers.
- 200 privates

Total 285 N. C. O's and men

Vehicles—

- 8 4-horse ambulance wagons.
- 1 4-horse wagon for tents.
- 15 2-horse wagons for stores.
- 3 1-horse medical store carts.

Total 27 vehicles.

Horses—

- 2 riding, for officials.
- 2 riding, for N. C. O's.
- 69 draught.
- 5 spare.

Total 78 horses.

Each hospital is supplied with 1 special and 50 ordinary stretchers, 10 boxes each with 200 sets of bandages, 50 lanterns,

and 50 bandaging knapsacks (1 of each per stretcher), 4 dressing tents, 2 operating tables, medical stores, food, etc.

RIFLE BRIGADE HOSPITALS.

The work of a rifle brigade hospital is as has been described for a divisional hospital.

Its composition is—

- 1 brigade surgeon commanding.
- 3 other surgeons.

Officials—

- 1 hospital overseer (commanding bearer company).
- 1 assistant.
- 21 non-combatant medical subordinates.
- 1 bearer company of 141 N. C. O's. and men.
- 32 transport N. C. O's. and men.

The vehicles consist of—

- 8 2-horse ambulance wagons.
- 15 2-horse store wagons.
- 2 1-horse medical store carts.

—
Total 25 vehicles and 56 horses.

The material carried is similar and proportionate in quantity to that carried in a divisional hospital.

MOBILE FIELD HOSPITALS.

The mobile hospital forms the third line of medical assistance, and each affords accommodation for 10 officers and 200 men. In action their position is selected by the divisional surgeon, and to them are brought the wounded from the main dressing stations. After an action they are emptied and follow their division as soon as possible. In action they are marked by flags as for a main dressing station.

The establishment of a mobile field hospital is as follows:

- 1 senior surgeon.
- 3 surgeons.
- 1 surgeon in charge of pharmacy.
- 1 hospital overseer.
- 1 assistant overseer.
- 1 accountant.
- 1 chaplain.

—
Total 9 officials.

7 dressers.
2 apothecary dressers.
1 veterinary dresser.
1 sacristan.
3 clerks.
1 sergeant-major.
1 quartermaster sergeant.
4 privates (non-combatants).
59 hospital attendants.
2 transport under officers.
26 transport drivers.

Total 107 N. C. O's. and men.

4 Sisters of Mercy, for whom a carriage, 4-horse, is provided.

Vehicles—

2 4-horse wagons.
19 2-horse wagons for stores, etc.
4 1-horse carts for medical stores.

Total 25 vehicles.

Horses—

4 riding, for officials and under officers.
50 draught.
3 spare.

Total 57 horses.

The stores of a mobile hospital comprise bedding and hospital clothing for 10 officers and 200 men, 210 bedsteads, 105 small tables, 40 stretchers, 3 large tents for 20 men, and the necessary medical and food stores.

The total strength of a divisional sanitary division is therefore—

	OFFICERS	OFFICIALS.	N.C.O'S. AND MEN.	HORSES.	CARRIAGES.
1 divisional hospital	1	6	285	78	27
2 mobile field hospitals	—	18	214	114	50
Total	1	24	499	192	77

OTHER MEDICAL FORMATIONS.

MOBILE FIELD HOSPITALS.

In addition to the two mobile field hospitals included in the sanitary division of each infantry division, there are mobilized by each active infantry division two mobile field hospitals, giving 96 in all, for general duty. Their composition is precisely similar to that of the others, and they are disposed of as required by the staff of the army to which they are attached.

RESERVE FIELD HOSPITALS.

These are established at points on the lines of communication, as may be required, 240 of them in all being maintained. They have no transport, their *personnel* and stores being forwarded by rail, boat, or by requisitioned carriage. Their composition is the same as that of a mobile hospital less the transport *personnel*, and each has—

- 5 surgeons.
- 5 officials.
- 4 Sisters of Mercy.
- 80 N. C. O's. and men.
- 5 wagons.

MILITARY SANITARY CONVOYS.

These are mobilized for the transport of the wounded and sick from the battlefield to the rear, and are in number 20. They are disposed of as required by the staff of the army. The establishment of each is as follows:

- 1 field officer (combatant) in command.
- 2 surgeons.
- 3 dressers.
- 1 apothecary dresser.
- 1 veterinary dresser.
- 1 commissary.
- 2 clerks.
- 19 hospital attendants.
- 3 transport under officers.
- 68 transport drivers.

—
Total 98 N. C. O's. and men.
2 Sisters of Mercy.

Vehicles—

- 27 4-horse ambulances.
- 1 4-horse kitchen wagon.
- 7 2-horse store wagons.
- 1 1-horse medical store cart.

—
Total 36 vehicles.

Horses—

- 4 riding.
- 127 draught.
- 6 spare.

—
Total 137 horses

FIELD DISPENSARIES.

The field dispensaries supply the divisional and field hospitals with all the medical and surgical stores they require. Seven in all are mobilized, and they are distributed as required. Each is provided with a supply equal to four months' requirements, and has a *personnel* of—

- 1 officer in charge.
- 2 other officials.

—
Total 3 officials.
3 apothecary dressers.
1 clerk.
17 non-combatant privates.

—
Total 21 N. C. O's. and men.

When required to move, transport is furnished under the orders of the army hospital inspector.

THE MEDICAL SERVICE IN THE FIELD.

It will thus be seen that, as in the British army, the medical service of Russia with the army of operations is divided into the medical *personnel* attached to the various units, the "divisional hospitals," which correspond to our bearer companies, and the field hospitals. On the lines of communication are the immobile (stationary) field hospitals, the detachments of weakly men, the sanitary convoys, and the field medical store depôts. In the home territory are the permanent, fortress and local hospitals. The military medical service is aided and supplemented by the Red Cross hospital establishment.

UNIFORMS.

The regimental medical establishments. The surgeons wear dark green tunics and trousers, with cuffs and collars, of the same color, with scarlet piping. The forage cap is dark green, with a dark green band and scarlet piping. Their shoulder pieces are narrower than those of the combatant officers, and are lined with green with silver lace. The subordinate *personnel* wears the uniform of the regiment.

FOR DIVISIONAL HOSPITALS.

Uniform and Arms.—The uniform worn by the men is the same as that of the remainder of the divisional supply and transport column, which is the same as that of the first regiment of the division, with the divisional number on the shoulder strap. The transport drivers have hatchets; the remaining *personnel* is unarmed. Except the transport drivers all wear the Red Cross badge on the left arm.

FOR RIFLE BRIGADE HOSPITALS.

Uniform and Arms.—Rifle uniform is worn by the men with the brigade number and the lazaret sign on the shoulder straps. Otherwise, as given above for the *personnel* of a divisional hospital.

FOR MOBILE HOSPITALS.

Uniform and Arms.—The uniform is the same as that of the 4th regiment of an infantry division, with the number of the hospital on the shoulder strap, their numbers running through the the army. The arms are the same as in the divisional hospital, and the Red Cross badge is worn similarly.



THE CARE OF THE WOUNDED BY THE JAPANESE IN RECENT NAVAL BATTLES.

By K. TOTSUKA, F.R.C.S. ENG.

SURGEON GENERAL IN THE IMPERIAL JAPANESE NAVY; DIRECTOR
OF SASEBO NAVAL HOSPITAL.

THE Medical Department of the Imperial Japanese Navy, through Surgeon S. Kimura of that service, has favored the Association of Military Surgeons of the United States with a copy of the report of the wounded admitted to the Sasebo Naval Hospital made by Surgeon General Totsuka, which we are glad to present as an index to the character of the injuries received and their mode of treatment by the medical officers of the Japanese Navy. The report is published in full in the Medical Journal of the Sei-I-Kwai or Society for the Advancement of Medical Science in Japan, a unique periodical published in European languages, mainly English, and in Japanese. It is accompanied also by supplementary histories of a number of the cases which will be found to be of the highest interest.

From the commencement of the War with Russia (Feb. 9th) to March 28th, the total number of the wounded admitted to the Sasebo Naval Hospital amounted to 36. Of these, 27 were wounded on Feb. 9th, when our squadron attacked Port Arthur and they were transported to Sasebo by the Genkai-maru on Feb. 13th, 2 were wounded on Feb. 24th, when the squadron intended to blockade the entrance of Port Arthur and were brought to the same by the Hospital Ship Kobe-maru on the 29th of the same month, while the remaining 7 were wounded in the sea fight on March 13th, who were transported to the same by the Hospital ship Saikyo-maru. The localities of the wounds and their subsequent course are briefly given in the following table.

THE WOUNDED ON FEBRUARY 9TH AT PORT ARTHUR.

SHIP	RANK	NAMES	LOCALITIES OF WOUNDS	COURSES OF WOUNDS.
First Squadron	Lieutenant.	K. Matsumura.	Gunshot wound of the left femur.	Skin-transplantation performed twice and little finger sized granulation remains.
"	Judge-Advocate.	K. Yoshimura.	Wounds of the left upper arm and right leg.	The first and second wounds healed on Feb. 29th and March 5th respectively without leaving hindrance for walking and left the hospital on Feb. 14th.
Mikasa.	Midshipman.	H. Sawamoto.	Gunshot wound of the nape.	Granulation went on favorably and healed on Feb. 29th.
"	2d Class Signal man.	I. Takizawa.	Gunshot wound of the left ankle.	On Feb. 14th wound was united and left the hospital on March 3rd.
Fuji.	Midshipman.	K. Ito.	Wound with loss of tissue of the right leg.	After admission an inflammation started in the connective tissue of muscles and on March 8th counter opening was made. At present the wound nearly healed.
"	Signal Boatswain.	M. Ono.	Perforated wound of the left popliteal space and the right leg.	Before admission mortification set in along nearly the whole part of the left leg and presented extreme anæmia accompanied by debility. Died on Feb. 14th.
"	Yeoman of Signals	S. Wataoka.	Wound with loss of tissue of the left femur and blind wound of inguinal region.	The first wound at first presented bleeding granulation surface, but after performance of skin-grafting it changed to benign granulation which contracted suddenly. The second wound healed on March 15th.
"	Able Seaman.	S. Sasaki.	Gunshot wound of the left shoulder and fracture of scapula.	After admission small pieces of the bone were extracted from the base of the wounds, and the surface of the wounds contracted to half size of the original form. The patient removed to Kure Naval Hospital on March 17th.
"	Able Seaman	K. Shinohara.	Contused wound of the right forearm.	At the upper third part of the right forearm an amputation was performed and slight inflammation and suppuration remained but he was transferred to Kure Naval Hospital on the 17th of the same month.

Fuji	First ordinary of sig- nals	sig-T. Kusatani.	(Gunshot wound of the right leg and fracture.	On Feb. 18th, an amputation was performed at the upper third of the right leg and on the 22d anterior-mortified flap was amputated. After the performance of skin transplantation on March 11th, the wound became narrowed considerably.
Hatsuse	Second yeoman of signals.	T. Sakamoto.	Wound with loss of tissue of left thigh. Gunshot wound and fracture of the left lower leg, burns of the face and head, contused wound of the right great toe.	All the wounds suppurred and the patient succumbed on Feb. 19th.
"	Able Seaman	Y. Sakata.	Burns of the face, rupture of left membrana tympani and perforated wound at the outer side of the dorsum of the left foot.	Burns cured on Feb. 16th and the wound on the outer side of the dorsum of the left foot on March 2d, after the rupture of membrana tympani of the left ear which gives some hindrance to hearing.
"	Able seaman	J. Tsuru.	Burns of the face and rupture of membrana tympani of both ears.	Burns healed on Feb. 27th but the ruptures of membrana tympani of both ears still remains and gives some hindrance to hearing power.
"	First ordinary seaman.	H. Eukushima.	Gunshot wound of the left knee.	After the removal of sutures on Feb. 25th the surface of wound became more open but grafting was performed on March 8th, and the wound healed at present, though there is some hindrance to motion of knee-joint.
"	"	J. Sato.	Gunshot wound of the left leg and fracture.	On examination by x-ray fracture of tibia and fibula discovered, and at present the fracture healed leaving only a pea-sized wound and slight purulent discharge.
"	Leading signal man.	T. Nakatani.	Contusion of the left sternoclavicular articulation.	As there was pain at sternoclavicular articulation the lifting of the left upper extremity was difficult but it became gradually better and left the hospital March 20.

Hatause	Qualified signal man	T. Okada.	Gunshot wound under the lower jaw on the right side	Opening of the wound cured on Feb. 22d but septic cerebro-spinal meningitis occurred consequently and died on the 27th of the same month
Shikishima	First Class petty officer.	Y. Isonaga.	Gunshot wound of the right knee.	Slight inflammation appeared along the margin of the wound and effusion was found in the knee-joint. The wound healed on March 12th and the effusion was withdrawn and the patient left the hospital on the 27th of the same month.
"	Qualified signal man	K. Wa al.	Gunshot wound of the left shoulder	Mortified tissue attached on the margin of wound was excised leaving the surface of the wound a size of a hen's egg and subsequently foreign bodies were frequently extracted but the healing of the wound was slow and skin-transplantation was performed on March 8th and the wound contracted to a size of a coin of ten sen at present.
"	"	O. Shimamura.	Perforated wound of the left calf, blind wounds of the left femur and left leg, wound with loss of tissue of the left calf.	The second and third wound contained some small pieces of iron-fragments, which were discovered by x-ray but did not extract them. The first wound was incised, and grafting method was performed with the 4th wound, both of which nearly healed.
"	First ordinary sea-man.	Z. Torii.	Wound with loss of tissue of the right forearm, gunshot wound of the left femur and fracture of the left leg.	The granulation of the first wound went on very slowly while the second wound suppurated very much. Later some pieces of iron fragments and those of smashed bones were extracted but pneumonia occurred as sequel and the patient succumbed on March 22d.
Iwate.	Sub-Lieutenant.	S. Takahashi.	Blind wound of the hypo-chondriac region.	An empyema appeared in the left chest and on Feb. 24th an opening made in the 10th intercostal space. Thus pus discharged and iron fragments were extracted and a small fistula remains, the original wound presenting a granulation the size of a grain of rice.
"	Midshipman.	T. Aoki.	Gunshot wound of the left arm and contusion of the left thoracic cavity and the left forearm.	The first wound united on Feb. 28th and contusion disappeared after a few days. The patient left the hospital on March 10th.

Iwate	Warrant Officer.	T. Osumi.	Perforated wound of the left shoulder.	After admission pieces of cartilage of the joint were extracted from the exit aperture. The entrance aperture healed on March 5th, but the former contracted to the size of a grain of rice and leaves granulation. Thus the movement of the joint is hindered.
"	First Ordinary Seaman.	K. Tanaka.	Perforated wound of the right upper arm and blind wound of the right chest.	The first wound nearly healed at present but empyema occurred as the sequel of the second wound, and excision of ribs performed on Feb. 27th and March 19th. From that time the course of wound went on favorably.
"	Second Ordinary Seaman.	G. Matsumoto.	Blind wound of the right chest.	As the healing of the wound was very slow the skin-transplantation was performed and surface of the wound presented benign granulation which size is equal to that of the tip of the little finger.
Yakumo.	Midshipman.	I. Kuwabara.	Blind wound of the right ilium and wound with loss of tissue of the left femur.	On the day of admission to the hospital pieces of iron fragments and of clothes were extracted from the first wound while the grafting method was applied to the second wound. Thus the surface of both wounds have contracted, the pus discharge having decreased.

THE WOUNDED ON FEB. 24TH ON THE OCCASION OF THE
BLOCKADE OF PORT ARTHUR

Shikishima.	Able stoker.	K. Takano	Blind wounds of the right back, right upper arm, right elbow, right femur and the leg.	Every wound went on without serious inflammation or suppuration and the first wound healed on March 15th after secondary suture on the 10th of the same month, and the second wound healed on the 10th of the same month, the fifth wound on the 12th, the third wound on the 28th after the perforation of secondary suture and the 4th wound on the 27th respectively.
Shikishima.	Leading stoker.	K. Fujimoto.	Blind wound of the right femur.	No sign of inflammation or suppuration and crust was formed on March 9th and began to exfoliate gradually. The patient left the hospital on March 27th.

THE WOUNDED ON MARCH 10TH AT PORT ARTHUR.

Kasumi.	Engineer.	Y. Minamizawa.	Blind wounds of the right chest, the left femur, and the left knee.	The first wound contracted very much after slight inflammation and suppuration, presenting benign granulation. No foreign bodies discovered by X-ray apparatus. The second wound contracted now to the size of a 5 rin coin, and the third wound healed by scabbing.
Akebono.	Second Class Sub-Lieutenant.	I. Shima.	Perforated wound of the right femur.	The exit aperture of the wound covered with scabs but the entrance opening of the wound was full of fibre like threads which were quickly washed away. The course of the wound very favorable and now contracted to the size of a copper coin of 5 rin.
Kasumi.	Engine Room Artificer.	T. Tomigawa.	Gunshot wound of the left cheek with fracture of the maxillary bone. Abrasion of the left shoulder, and blind wound of the left upper arm.	The first wound leaves a finger-sized surface at the posterior and superficial margin of the wound and saliva was at first seen but it ceased after a few days. The wound of the cavity of mouth nearly healed after the extraction of fragments of the crushed bone and injured teeth. The second and third wounds also going on favorably.
Asashio.	Leading Seaman.	Y. Miura.	Gunshot wound of the right temporal region.	The wound healed on March 27th without accompanying inflammation or suppuration.
Kasumi.	Leading Stoker.	K. Inagu.	Gunshot wound of the right temporal region with fracture of zygomatic bone.	The suture was removed on March 16th and the greater part of wound healed at the first intention. Benign granulation equal to the size of a pea and that equal to the size of the tip of a little finger remain at the external canthus and the temporal region respectively.
Sazanami.	"	K. Umegu.	Gunshot wound of the right arm and perforated wound of the back of the hand and the right knee.	The first wound formed a benign granulation equal to the tip of a little finger. The second wound healed on March 28th. The third wound contracted to a narrow and long wound and discharged a small quantity of pus.
Shinonome.	Able Seaman.	S. Matanaka.	Concussion of the labyrinth.	The hearing power is recovering gradually.

Of thirty-six wounded admitted to the hospital four persons died, eight left it after recovery, and two were transported to the Kure Naval Hospital as above mentioned. So, the wounded remaining in the Sasebo Naval Hospital are 22 at present. The condition of these cases is generally favorable and some of them will leave the hospital in a short time. The other cases are gradually recovering without any danger to life.

The wounds produced from sea fights are generally caused by bursting of shells and inflict two or more injuries to one body as will be seen by the above table. To describe minutely these wounds is out of the question. So, slight exfoliation, contused wounds, and burns, are omitted here, and only principal wounds stated in the table. But the total number of wounds for 36 persons amounted to 62, that is two wounds per person. Some of these wounds have only small external apertures equal to size of a pea but others are so large that whole limbs were mutilated completely. Besides the forms of wounds which do not belong to these above stated are various but they may be classified as burns, abrasions, contusions, blind wounds, perforated wounds, and wounds with loss of tissues. Some of the wounds were accompanied by fracture of bones or injury of important vessels but others were not. The causes of the wounds were attributable to bursting of shells in many cases but sometimes the wounds occurred from direct contact of shells (as in Ito and Aoki). It is very difficult to distinguish whether contusions or blind wounds were originated from shell-fragments or caused by foreign bodies scattered from surrounding matter in cases where foreign bodies were already extracted. But they must have been chiefly caused by the penetration of shell fragments because the wounds have generally reached the deeper part of the body. At the same time it is very noticeable that most of the wounds caused by the penetration of shells are blind, and perforated wounds are rather few as compared with bullet wounds. Such phenomena may be caused from the inertia of flying power of shell fragments which is weaker than that of bullet wounds, and another noticeable fact is that two cases of burns of faces (K. Sakata and J. Tsuri) were complicated by the rupture of membrana tympani. This seems

to prove that at the time when the shell fragments burst the men received strong concussion of the membrana tympani together with burns of the face. In two cases of blind wounds of the thoracic cavity (Sub-Lieutenant Takahashi and First Ordinary Seaman Tanaka) the existence of foreign bodies were not discovered by the surgeon when they were admitted to the hospital. But both of them had empyema as sequelae after some time. And then shell fragments and pieces of crushed bones were suspected. This proves that wounds near the important regions of the body require most careful examination.

The condition of the wounded when they were admitted to the hospital is of course different according to the length of time elapsed since the infliction of the wound and the method of treatment received before their arrivals. The first cases were admitted to the hospital four days after they were wounded, the second cases five days after treatment was given, while the third cases three days after; though there are some difference in the length of time, we shall summarize briefly the progress of wounded below. All these cases already passed the first period of wounds, i. e. hemorrhage ceased and tissues in wounds crushed by shells began to putrefy and inflammation of reaction appeared at the margin of wounds. The openings of some bigger wounds were generally covered with dark grey putrid tissue and healthy red granulation was not yet formed. Those which were already sutured were beginning to unite at some parts but they were mostly surrounded with red congested rings and pus discharge was sometimes seen at different spots. Small contused wounds or perforated wounds were already filled with coagulations and seemed to be healing without any sign of inflammation or suppuration. In the bigger wounds, however, large quantity of excretion resembling dark red serum oozed out through the dressings, and some of them had bad smell and presented clearly the symptom of suppuration. On examination of the wounds from which foreign bodies or shell fragments were known to have been already extracted, yet small pieces of clothes or bony pieces crushed by shells were gradually extracted a few days after admission to the hospital. The spirits of the patient were high and full of pleasant memories and there was no sorrow or lament about the wounds or injuries they had received except in a few serious cases.

All the cases except those who had fractures seemed to have no pain. The temperature of some serious cases rose above 38° or 39.°5 but most of them hardly reached 38 degrees. The appetite of the patients was normal and the most of them preferred to take ordinary diet to that regulated for patients.

We shall now describe briefly the management of wounds and injuries in the hospital. When the wounded were admitted to the hospital the forms of wounds and injuries were carefully examined after the dressing of the wounds was removed under complete antisepsis. If application of bougie was necessary it was used with great care. In cases where the wound was distended the sutures were removed. If an amputation or complicated operation for wounds was necessary the proper treatment was given in the operating room. When the surface or margin of wounds was clean they were simply wiped by wet compress with sterilized water, and sterilized and disinfected gauze was applied and bandaged. On the contrary, when the surface of wounds presented the signs of suppuration or the fluid excreted from wounds had a bad smell or wounds had fractures of bones as their complication, perchloride of mercury which was dissolved in 3000 times water was used to wash the wounds, iodoform gauze was applied or baro-salicylic powder was distributed, and bandaged. Careful examination for shell fragments, foreign bodies, and fracture of bones was generally made after the first change of dressing. Then examination by x-ray and other minute examination was performed as a common routine.

The result of the treatment of wounds and injuries was generally favorable, and small blind wounds, or perforated wounds, which were equal to those of calibres of muskets, generally healed within two or three weeks without presenting any sign of suppuration. Even the bigger wounds, equal to the palm or even larger when not accompanied by fracture of bones or with loss of tissue, generally healed without presenting any symptom of phlegma or inflammation by producing healthy granulation after the separation of the mortified tissue of wounds. A few cases, however, discharged pus in large quantity and healing of wounds was very slow. This was entirely attributable to the fact that the wounds contained pieces of clothes or bones crushed into them by shells. Preservative treatment was applied for cases which had fracture

of bones as a complication and their progress was all well except in one case of fracture of the femur (J. Torii).

After admission of the wounded to the hospital four cases terminated in death. These cases of deaths are briefly as follows: (1). Ono, Signal Boatswain: This patient's left lower extremity was already mortified and presented a dark purple color below the knee-joint when he was admitted to the hospital. The right leg was also cold and senseless. Besides he was very anaemic and greatly prostrated. Under such circumstances no operation could be performed, and he succumbed the following morning. The cause of death may be attributable to excessive hæmorrhage occurring from the injury of the popliteal arteries and obstruction of the circulation of the left lower extremity. (2). Sakamoto, Second Yeoman of Signallers: In this case the left leg was amputated about two inches below the knee-joint after admission to the hospital. Besides, the first metatarsal bone of the right foot was contused at its extremity and at the posterior part of the left femur there was a big contused and lacerated wound nearly equal in size to both palms put together. Moreover, the face and head had several small contused and lacerated wounds. The temperature of this patient was very high even at the time of admission, the surface of wounds were very dirty, plentiful putrid fluid was discharged and the condition of septic fever was clearly seen. He died on the sixth day after admission to the hospital. (3). Okada, Qualified Signalmán: At the time of admission, the posterior part of the lower jaw (right side) had little finger sized blind wound. At first the presence of shell fragments were not suspected but we thought they had stopped at the neighboring part of the vertebral column, perforating some part of the pharynx, because of a discharge of sputum mingled with blood, dysphagia, strong bad smell on expiration, and severe pain of the neck after the infliction of the wounds was noticed. Nevertheless, the aperture of entrance of gunshot was closed and no foreign body was seen in the mouth cavity. In addition to these, paralysis of the upper and lower part of the left extremity appeared and the patient succumbed on the 29th of the same month. By postmortem examination, the passage of shell fragments through the right side of the epiglottic cartilage and the third vertebral bone and penetration to the left

semilateral part of the spinal medulla was found. For a case with such serious wounds no relief was to be found except death. (4). Torii, First Ordinary Seaman: This case had a wound with loss of tissue inflicted on the right upper arm and severe compound comminuted fracture of the upper part of the left femur. Early operation for such a serious case under so dangerous condition is, of course, a question. So, we intended to manage this case by conservative treatment, and extracted some pieces of shell fragments and a few bone pieces. But all efforts to prevent suppuration were unsuccessful and he succumbed through septic pneumonia on the 20th of February.

The above mentioned number of cases is only thirty-six and so few instances of the wounded are not, of course, sufficient demonstration for general character of the gunshot wound. But if we think over the past progress and course of the wounded, the results of the wounds might be considered to be generally good. For example, many cases of some small contused wounds or perforated wounds have generally healed in the first period of the union of wounds. For severe contused and lacerated wounds suppuration followed more or less but inflammation of high degree in the wounded region or traumatic infectious diseases as sequelae of the wounds were almost nil. The temperature generally became normal soon after admission to the hospital and the union of wounds went on comparatively favorably and quickly. The causes of the good results we obtained are attributable to the modern progress of surgery and good management of the wounds. In other words, the good results are the gifts of the careful attention and earnest service of our naval surgeons on board the warships, hospital ships and transports, who were most earnest and prompt in the treatment of the first period of wounds and injuries at the battles. The courses of the second and third cases who were transported to Sasebo Naval Hospital by the hospital ship were better than those of the first cases who were sent back by a transport. This clearly shows that the hospital ship which has everything ready for the treatment of the sick and wounded is superior to the common transport in the point of management of the sick and wounded. In future, we hope, the hospital ships may be employed to transport the cases of sick or wounded, as much as possible.

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**BRIGADIER GENERAL CHARLES HENRY CRANE.
SURGEON GENERAL U. S. ARMY,—1882-1883.**

Editorial Expression.

The Surgeon Generals of the United States Army.

XIII. BRIGADIER GENERAL CHARLES HENRY CRANE SURGEON GENERAL OF THE UNITED STATES ARMY—1882-1883.

PROMOTION in the Army which had been almost at a standstill for years owing to the uniformity in age and endurance of the great number of officers who had come into the service during and just after the War of the Rebellion, was galvanized into activity by the adoption of an enforced retiring age. As soon as it became evident that such provision was likely to become law and that it would inevitably produce a vacancy in the Surgeon Generalcy, a general movement toward the succession took place among the senior medical officers of the service. At this time appeared the candidacy of Colonel J. H. Baxter, which was to be an active factor in the contest for the office in the case of each vacancy thereafter until success crowned the undertaking in 1890. Colonel Charles H. Crane, however, had been Assistant Surgeon General for many years and it was an entirely expected result, when the appointment came to him.

Charles Henry Crane was the son of Captain (afterward Colonel) Ichabod Bennet Crane of the Artillery and was imbued with military tendencies from his earliest years. Born at Newport, R. I., July 19, 1825, he enjoyed the delights of garrison life until he was of an age to be placed at school, when he was duly entered at Maple Grove Academy in Middletown, Conn., where he received his preparatory education. In 1844, after the customary four years course, he was graduated B.A. from Yale which institution also conferred the M.A. in cursu upon him in 1847.

In 1847 he also completed his medical studies at Harvard and received his doctorate. His heart went out to the service in

which he had been bred and he lost no time in appearing before the Army Examining Board and on December 11 of the same year passed successfully and became an approved candidate for a commission. Pending his appointment, as was then the custom, he was given a contract as Acting Assistant Surgeon and assigned to duty with a detachment of troops en route to the scene of hostilities in Mexico, and arrived at Camp Washington, near Vera Cruz, February 20, 1848. Meanwhile he had been commissioned as an Assistant Surgeon since February 14. He then continued in Mexico for the ensuing six months when he was ordered to New York.

After a short time at Fort Columbus, New York, he accompanied a battalion of the 2nd Artillery to Fort Monroe, whence he proceeded to Fort Pickens, Pensacola, Fla. and began a three years tour of duty in the Floridian peninsula with service at Key West Barracks, St. Joseph's Island, Forts Pickens, Brooke, Fraser, Casey and Myers, and with expeditionary forces in the field. His next duty carried him to the Pacific coast, whither in 1852, he sailed from New York on the steamer "Falcon" carrying recruits to California. He passed four years west of the Sierra Nevada, serving at Benicia Barracks and Fort Jones, Cal. and at Forts Lane and Yamhill, Oregon. Much of the time however, he was in the field, including expeditions against hostile Indians near Merced River, Cal. and in the Sacramento Valley in 1852, while his Oregon service in 1853-1856 was full of Indian service, conspicuously in which was an expedition against the Rogue River Indians in 1856 upon which occasion he was highly commended for distinguished service.

In 1857 he returned again to the Atlantic Coast where he remained on purveying and examining board duty for two years. In 1859 he accompanied Lieutenant General Scott on a diplomatic visit to San Juan Island and remained until 1862 on duty as attending surgeon at army headquarters, receiving meanwhile, May 21, 1861, his promotion as Major and Surgeon.

In February, 1862, he was detailed as Medical Director of the Department of Key West, Fla., and in June of that year he became Medical Director of the Department of the South, whence

in July 1863, after awaiting orders for a short time in Washington he was assigned to duty connected with Prisoners of War, until September.

At this time his friend Colonel Barnes was detailed as Acting Surgeon General and he was himself detailed as principal assistant in the Surgeon General's Office. He soon displayed remarkable executive ability and such exceptional adaptability to his position that he was retained in it until his promotion to the Surgeon Generalcy in 1882,—nineteen years. During the remainder of the war, however, Colonel R. C. Wood retained the rank and title of Assistant Surgeon General to which he had been promoted in 1862, although he was not on duty in the office, until in accordance with the Act of April 16, 1862, he was honorably mustered out and returned to the rank of Major. This opened the way for Major Crane to be promoted to a grade corresponding to the functions he had been performing for nearly three years and promptly after the passage of the Act of July 28, 1866 fixing the peace establishment of the Army, he was appointed Assistant Surgeon General with the rank of Colonel. In March 1865, he received the brevets of Lieutenant Colonel, Colonel, and Brigadier General "for faithful and meritorious services during the War of the Rebellion."

General Crane was the wheel-horse of the Surgeon General's Office. The pyrotechnic side was carried on by General Barnes, who was possessed of marvelous diplomacy and never-failing tact. The detail work however fell to Colonel Crane. "In connection with the arduous and important work connected with the latter years of the War of the Rebellion" said Major Huntington, "his sound judgment, delicate sense of justice and right, his deliberate action and fine decision soon won for him an enviable reputation and materially assisted in raising the Medical Corps of the Army to the high degree of discipline and efficiency which has characterized it in the past and present."

On July 3, 1882, he was appointed Surgeon General of the Army. The new position demanded little change in his duties. For many years he had been most assiduous in his devotion to the work of the office and he now simply continued to manifest

the same patient, earnest and punctilious attention to the affairs of his department. He had the pleasure of seeing the completion of the Surgical part of the Medical and Surgical History of the War of the Rebellion and of getting the final medical volume well under way in the hands of an officer whom he had selected for the duty.

Personally he was possessed of a kindly and generous spirit and characterized by a strong and dignified bearing. His unexpected demise on the 10th of October 1883 was a shock to his Corps and to the service for which he had labored so long, so faithfully and so successfully.

A PLEA FOR A HIGHER, PHYSICAL, MORAL AND INTELLECTUAL STANDARD, FOR THE PERSONNEL OF THE NAVY.*

THE reader interested in the subject of which this paper treats, cannot fail to perceive, that it is written by one, who speaks whereof he knows; by one who has a considerable credit in the sea-service column of the Naval Register, who entered before the sailing craft was obsolete, yet who is young enough to keep up with the New Navy.

The style is strong, cogent, terse English, which at times reminds us of the writings of Lind, Sir Gilbert Blane, or Trotter, when fighting the great sanitary curse of the ships in the British Navy in the 17th and 18th centuries.

Is it not a singular fact, that in this advanced age of thought, one would find it necessary to seriously argue, the question of the requirement of robust health in the trying vocation of a sailor? Yet we see it here, and furthermore, strange to relate, there is need of it,—the custom of waiving rejections for physical cause, so common heretofore at the Naval Academy, has worked a wrong to the official personnel of the Navy, and to the State, and it cannot be denied that parents as a rule are oblivious of any obliquity, if they can but succeed in embarking their wards in the service, even

*Medical Inspector Howard E. Ames, U.S.N. *Proceedings of the U.S. Naval Institute.* Vol. XXX, No.1.

though often it can be shown, that such a life will be directly detrimental to the individual most concerned. In this connection Medical Inspector Ames writes " 'Physical soundness, is a vague condition in some respects, and leaves open many questions that are of the greatest importance; such as weight for age, weight for height, height for age, chest-measure for age. The limits now given are too broad and not finely enough adjusted. There is unfortunately no law regarding these factors which are of the greatest importance, in measuring the physical qualifications of the candidate. The circulars sent out by the Department have varied, and none of them were based on a careful study of the subject in its ultimate bearings on the needs of the service, and I do not hesitate to say, that the matter today is in a most unsatisfactory state and gradually growing worse.' "

It is only fair to state in this regard, that the subject of waiving the finding of the Medical Board at Annapolis, for physical defects, has recently been fully considered by the Navy-Department, and instructions issued, which while leaving a wide limitation of discretion with the examining officers, have tended in every way, toward the recognition of a higher physical standard. At the recent session held at Annapolis there were 56 rejections, in 341 examinations; the finding of the Board being sustained in every instance. Nevertheless there is but little question of the need of a more definite standard, for as the Board changes its personnel every year the requirements must vary likewise.

Allusion is made to the useful work of Surgeon H. G. Beyer, U.S.Navy, and its anthropological value, and it is remarkable, that his work, has never been availed of to establish, or assist in establishing, the "juste milieu," of physical requirements for admission to the Naval Academy. The wide field of evil consequences of physical defects, sustained by a large personal experience, is discussed with clearness, and ability, and the fact that in the examining-room is the place to safeguard the interest of the State, and give it "the benefit of the doubt" is happily and strongly pictured. All will sympathize with the writer in his plea for a higher standard of height especially. He writes "it is sophistry to argue in favor of a small man for military purposes,

particularly an officer; he cannot have a military personality no matter what his intellectual attainments." "Enlisted men generally judge an officer by his outward appearance. It can be set down as a principle that a small man is rarely a successful officer." "Are we asking too much to fix the standard of minimum height for the graduate at 5 feet 6 inches, when the mean for our people is 5 feet 7 $\frac{3}{4}$ inches?"

There can be but little doubt of the desirability of body-weight being at graduation 2 pound to the inch in height.

Indeed if the regulations requiring "robust" physique were followed, candidates for admission would closely attain this figure. Of 35 candidates admitted this year at Annapolis between the ages of 16 and 17 years, the average height was 67 $\frac{1}{2}$ inches the average weight was 132 $\frac{1}{2}$ lbs. With a very considerable experience, both in the training-service and on the Board of Examiners at the Naval Academy, I am of the opinion, that while standards of development should be ascertained as accurately as possible, and promulgated by authority, a reasonable amount of discretion should be vested in the Examining Board. In this matter of growth and development, and what should be attained in a given number of years, there are factors, beyond the ken of the statistician, and they will be best solved by the conscientious and careful examiner, who has the candidate before him, and in forming his opinion judiciously considers these factors in connection with the many other vital questions, involved in a given case.

There is no doubt that the teeth, not only as to their fitness for proper mastication, but as an index of the constitutional condition, have not received the careful consideration which is demanded. The ills arising from their neglect are all truthfully laid down. No thinking Examiner can reflect to-day, on the large number of cases presenting, in which the young have lost so many permanent teeth, with the remainder carious, without grave apprehension as to the future in this regard. A competent dentist has been attached to the Board at Annapolis and the exact number, and condition of the teeth, occlusion and the formation of the maxillaries, are given full weight.

That Medical Inspector Ames is no apologist for the work of his Corps is quite evident. He arraigns in no enviable manner the

work of recruiting parties now traveling the country-side, in quest of men of war. He deprecates very justly, the hurried way in which this important duty is done; justly remarks in case of a vaunted number of examinations made in a remarkably short time "that instead of commendation a few words of reproval were merited by that party." Passing from the physical and intellectual aspects of this important subject to its moral relations, the writer adopts as his text "Good health is the basis of all physical, intellectual, moral and spiritual development." He continues "the ability to judge the morals of a man by inspection is a difficult matter, but the brain impressions and mind force are reflected on other parts of our body, so that some knowledge can be obtained by a study of the appearance and the movements of the man, the facial expression and his replies to questions;" the man "with maimed ears, and long cicatrices from knife cuts"—as indicative of deformity and degeneracy; the men who Mahan says "attach no wrong to the violation of a contract, hence desertion. Equally they have no sense of their dignity as men, nor the beauty of self-control, hence drunkenness, unaccompanied by any sense of shame." The writer's characterization of the worthy old-time salt is equal to Thomas Trotter's eulogy on the British seamen of his day—"He stands naked before me for his last active-service examination; and I note the eagle and our flag upon one arm, and on the other, Faith, Hope, and Charity. I see the faded tattooed cross upon his wrinkled, weather beaten breast, which throws his short-comings in the shadow; the pressure of his hard, but generous hand, and the fearless honest look of his eyes, is kindness and all else."

The conversion, and evolution of the modern, intellectual high-type seaman, who mans our ships of war, his life, work, aspirations, needs, are graphically told.

The difference between the happy ship (painted white), and the unhappy ship (painted black), is a philosophical disquisition, in lighter vein, which should be seriously pondered, whenever a squadron puts to sea, by every one from the Commander in Chief down to the Jack of the deck.

A thoughtful paper of this character cannot be dissected. It should be read as a whole by every one interested in the personnel of our naval service.

JOHN C. WISE.

Current Literature.

THE SANITARY SERVICE IN THE FIELD.*

IN this publication, the essentials of the science of the terrain are presented for the information of the Sanitary Officer, to enable him to apply such knowledge in the exercise of his professional services in the field. The subject is presented under the following three headings:

1. Description of the Terrain, under the subdivisions: Topography, Hydrography, Orography, and Chorography; its relation and bearing to climate, health, population, character of land, and its state of cultivation, its resources, also means of communication, etc.

2. Representation of the terrain: By sketches and by military charts, which must show relative elevations, and all objects of importance, as water courses, bridges, fords, settlements, woods, roads, railroads, etc. A list of the symbols which are used on these charts to designate the various objects of importance, is given.

3. Application of the science of the terrain for the Sanitary Service: This chapter treats of the practical deductions, which result from a study of the military charts, and gives the indications for the proper disposition of the sanitary force, under various conditions. In this connection reconnaissances by Medical Officers are also discussed. The selection of suitable sites for dressing stations, is very fully gone into. Among the fixed rules laid down are the following: Fords in water courses can be used with safety, by sanitary vehicles, when the depth of the water does not exceed 60 cm., and the current is not swifter than 1.3 m., per second. Packed snow can be used as shelter from rifle fire when it has a thickness 1.5 m.

*A Compendium on the "Science of the Terrain," for Military Sanitary Officers. *Gelände und Feld-Sanitätsdienst. Ein Compendium der Terrainlehre für Militärärzte, Militärärztliche Publicationen Nr. 57, Mit 156 Figuren im Texte, 8vo; pp, 128. Wien, Verlag von Josef Safar, 1901,*

Grades up to 3% form no special obstacle for vehicles, or stretcher bearers. From 3 to 5% they impede the progress of bearers, and oblige vehicles to proceed at a pace. From 5 to 10% they form a considerable impediment to both. At 10 to 15% they can only be used with the greatest effort by the stretcher bearers, not by vehicles; at 15 to 30% they can only be used by specially trained bearers, etc.

For the estimation of distances, the following are amongst the rules given: At 2,500 paces, moving individuals, can be distinguished from the field. At 1,500 paces individuals, at rest, can be distinguished. At 1,000 paces the head of a horse can be differentiated from the rider. At 600 paces the head covering of a man can be distinguished; at 300 paces the face. At 4,000 paces the cross can be distinguished in the Geneva flag.

In the orientation in the terrain, the compass, the chart, the position of the sun or moon, are the means of determining the position.

The booklet concludes with a series of questions, which have to be answered from a study of the chart. A key to these questions is given.

F. W. F. WIEBER.

VON BERGMAN'S SURGERY.*

THE second and third volumes of this excellent publication have so promptly followed the first, that a prompt completion of the whole in a very short period is assured.

The second volume contains the surgical diseases of the neck, thorax and spinal column, giving the latest and most up-to-date methods of examining and treating the diseases of these regions. The methods of treatment for spinal troubles in this volume differ much from our American methods and in some instances are an apparent improvement; the surgeon will do well to investigate them carefully.

***A System of Practical Surgery.** By Drs. E. VON BERGMANN, of Berlin, P. VON BRUNS, of Tübingen and J. VON MIKULICZ, of Breslau. Edited by WILLIAM T. BULL, M.D., New York. Volume II. 820 pages, 321 engravings, 24 plates. Volume III. 918 pages, 595 engravings, 21 plates. Philadelphia and New York, Lea Brothers & Co., 1904.

Volume III is devoted to the surgery of the extremities. From a careful review of the contents one is fully convinced of the thorough understanding of the subjects presented by the various authors. This volume, to the general practitioner, will prove the most valued one of the series. While he may miss a few suggestions and methods contained in our best and latest American text books, yet these are so fully understood that it does not detract from the value of this work that they are missing, as they are supplanted by many new suggestions that will prove valuable when tried.

The illustrations and plates are more numerous than in the first volume and add greatly to the value of the book. A.R.ALLEN

THE DOCTOR'S LEISURE HOUR.*

THE Doctor's Recreation Series, promised for several years, brings out its first volume in "The Doctor's Leisure Hour," a compilation of sketches, poems, skits and incidents relating to medicine and the physicians. The book will well fulfill its purpose to lighten the needed hours for rest of the practitioner and as well afford to his clients an enjoyable series of illustrations of the physician's life, the perusal of which can not but be of advantage to the medical adviser of the reader's family. It is hoped that this delightful work will have a wide circulation.

The second volume of the Doctor's Recreation Series fully sustains the promise of the first, containing as it does twenty-two interesting selections from current fiction with reference to the medical practitioner. Among these may be mentioned Conan Doyle's "Doctors of Hoyland" Ian Maclaren's "Doctor of the Old School," Henry Seton Merriman's "On the Indian Frontier" together with others of fully as high grade of interest. The

The Doctor's Recreation Series. CHARLES WELLS MOULTON General Editor. Volume I. **The Doctor's Leisure Hour.** Facts and fancies of interest to the Doctor and his patient. Arranged by PORTER DAVIES, M.D. 8vo: pp. 352; 4 plates. Volume II. **The Doctor's Red Lamp.** A book of short stories concerning the doctor's daily life. Selected by CHARLES WELLS MOULTON. 8vo; pp. 343, 4 plates. Akron, Ohio, The Saalfeld Publishing Co., 1904.

plates are reproductions of celebrated paintings and add much to the value of the sumptuous setting provided for the work by the publishers.

ROENTGEN RAY DIAGNOSIS AND THERAPY.*

THIS is one of the most elegant medical works that we have ever seen,—printed upon extra heavy enameled paper beautifully bound and handsomely illustrated with a profusion of most instructive plates. Dr. Beck is well known for his expert knowledge of the Roentgen Ray and, in writing upon the subject, speaks with authority. The work is divided into three sections, treating respectively of the subject from (1) the general, technical standpoint, (2) the regionary clinical standpoint, and (3) the effects of the Roentgen Ray. In the technical part the instruments and methods of their employment are fully and clearly described, while in the clinical part the author takes up the application of the process to various regions, closing with the consideration of the medico-legal aspect of the Roentgen Ray, while in the final section he speaks more specifically of the therapy, touching upon the Finsen light method, the Becquerel Rays and Radium, and concludes the work with an exhaustive bibliography.

DISEASES OF THE INTESTINES AND PERITONEUM.†

ANOTHER handsome volume of Nothnagel's Practice, under the American editorship of Professor Alfred Stengel, comprises the eighth in the series and covers the subject of diseases of the intestines and peritoneum. This volume is of particular interest because of its being the work of Professor Nothnagel himself and bears evidence on every page of the careful painstaking and exhaustive industry typical of the German

**Roentgen Ray Diagnosis and Therapy.* By CARL BECK, M.D. 8vo; pp. 460 with 322 illustrations; New York and London, D. Appleton & Co. 1904.

†*Diseases of the Intestines and Peritoneum.* By DR. HERMANN NOTHNAGEL of Vienna. Edited, with additions, by HUMPHREY D. ROLLESTON, M. D., F. R. C. P. Octavo volume of 1032 pages, fully illustrated. Philadelphia, New York, London; W. B. Saunders & Company 1904.

scientist. The book has been further adapted to the English speaking practitioner by the work of Dr. Rolleston so well known as one of the most competent and accomplished of English physicians. Appendicitis is particularly conspicuous in the work and is treated thoroughly from the medical standpoint. Occlusion and stenosis of the intestine are discussed in full and the section on intussusception has had the advantage of special treatment by Mr. D'Arcy Power. The work closes as usual with a complete bibliography.

INTERNATIONAL CLINICS.*

THE valuable quarterly publication, *International Clinics*, presents in the second volume for 1904 a series of timely, practical and original articles with excellently executed and clearly explanatory illustrations. The opening article is on the spread of diseases by insects by Major Charles F. Mason of the Army and is followed by a series of other papers upon diseases of warm climates, which are of the greatest interest to military and naval officers. Treatment, medicine, surgery, pediatrics and rhinology are also well represented.

CASE TEACHING IN SURGERY.†

THIS little work, prepared for the surgical classes of Harvard University, consists of statements of the history of seventy-five surgical cases upon the even numbered pages of the book, the odd numbered pages opposite being left blank for the student's diagnosis, prognosis and treatment. It will be found a most valuable and useful assistant to the teaching of surgery everywhere and the authors are to be congratulated upon the original thought which inspired the preparation of the work as well as upon the practical and efficient manner in which it has been worked out.

**International Clinics*. Edited by A. O. J. KELLY, M.D. Fourteenth Series. Vol. II. 8vo; pp. 314. Philadelphia. J. B. Lippincott Co., 1904.

†*Case Teaching in Surgery*. By HERBERT L. BURRELL, M.D. and JOHN BAPST BLAKE, M.D. 12mo; pp. 160; Philadelphia, P. Blakiston's Son & Co., 1904.

SENN'S NATIONAL RECREATION PARKS.*

IN the publication of this little book Colonel Senn gives us a new view of the travels with which he is accustomed to rest his faculties strained by the severe work of a strenuous surgical practice. The need of such a work has been felt by many who have been interested in the Yellowstone and Yosemite, and this capital little book will amply supply this demand.

CLOSURE OF LAPAROTOMY WOUNDS IN GERMANY AND AUSTRIA.†

THIS little monograph is composed principally of extracts from letters received from nearly sixty of the leading surgeons of Germany and Austria upon the subject of the closure of laparotomy wounds and, including the opinion of the principal operators of those countries, comprises a most instructive and valuable compilation.

THE SURGERY OF THE HEART AND LUNGS.‡

THE existence of so extensive a monograph as this upon the surgery of the heart and lungs, organs which but a few years ago it would have been considered homicidal to touch, is a most gratifying index to the progress of the art of surgery. The author opens each section of his work with a discussion of the anatomy of the organs. He then proceeds with a full discussion of the surgical conditions which are applicable to them. His chapter upon gunshot, lacerated and incised wounds is one of his most complete and records a number of interesting cases of surgical interference. He then takes up a lengthy account of his experimental research on the heart of the dog, re-

**Our National Recreation Parks.* By NICHOLAS SENN, M.D., LL. D., Surgeon General of Illinois; 16mo.; pp. 147, 48 full page illustrations; Chicago, W. B. Conkey & Co., 1904.

†*The Closure of Laparotomy Wounds as Practiced in Germany and Austria.* Edited and translated by WALTER H. SWAFFIELD, F. R. C. S., M. D. 8vo. pp. 72; Philadelphia, P. Blakiston's Son & Co., 1904.

‡*The Surgery of the Heart and Lungs.* By BENJAMIN MERRILL RICKETTS, Ph.B. M.D. 8vo: pp. 510, with 87 plates. New York, The Grafton Press, 1904.

lating in full detail nineteen cases of cardiac operations, the large proportion of which were fatal. The section relating to pulmonary surgery is fuller and naturally more practical than that relating to cardiac interference and also closes with a series of experimental operations. Every phase of the study is accompanied with an exhaustive bibliography,—so full indeed that the bibliography in some cases occupies more space than the text which it illustrates. The book is a valuable study and forms a landmark in surgical work.

SURGICAL DIAGNOSIS.*

THIS little work is intended mainly for dressers and junior practitioners and is an excellent simplification of the means of obtaining a correct diagnosis in surgical cases. The author's methods of procedure are clear, definite and explicitly stated. Careful observation of his rules will be of the greatest advantage to the young practitioner or to him of longer standing in the profession but with comparatively little surgical experience. It is a capital little book.

THE CLINICAL STUDY OF BLOOD-PRESSURE.†

THIS handsome monograph is a valuable contribution to the advanced and detailed study of medical subjects and will prove of great advantage to the many progressive medical men who desire to carry their work beyond the limited fields necessarily outlined in the medical college text books. The book forms a complete and instructive guide to the use of the sphygmomanometer in medical, surgical and obstetrical practice together with a summary of experimental and clinical facts relating to the blood-pressure in health and in disease. The author invites attention to the fallibility of the sense of touch in determining the vascular tension and believes that more careful considera-

***A Manual of Surgical Diagnosis.** By JAMES BERRY, F.R.C.S. 12mo; pp. 363. Philadelphia, P. Blakiston's Son & Co., 1904.

†**The Clinical Study of Blood-Pressure.** A Guide to the Use of the Sphygmomanometer. By THEODORE C. JANEWAY, M.D. 8vo; pp. 300 with 75 illustrations, New York and London. D. Appleton & Co., 1904.

tion of the blood-pressure will add materially to the efficacy of both diagnosis and prognosis and be of much use in determining therapeutic action. The subject is considered in three parts, (1) physiological, (2) technical and (3) clinical, under which the history, methods and conclusions are exhaustively treated.

POLK'S MEDICAL REGISTER.*

THIS standard publication comes to us for the eighth time and presents all the familiar features which have made it so useful in the past. As would be natural in case of a work of the kind some of the information has been supplanted by later modifications, although that referring to the Association of Military Surgeons of the United States and its JOURNAL is up to date and entirely correct. The book will continue in the future as in the past to contribute to the best interests of the profession.

ALKALOIDAL THERAPEUTICS.†

THE alkaloids have been growing in importance and professional prominence particularly during the last few years. The most enthusiastic propagandists of their use are the authors of this interesting treatise, who have of recent years devoted themselves exclusively to the work. The book is a systematic and comprehensive discussion of the subject, taking up each alkaloid in turn and discussing its pharmacy, physiology, toxicology and therapeutics in much detail. An interesting feature of it is the insertion, at frequent intervals, of blank pages for practical notes by the reader from which many useful points should ultimately accrue to the authors. It is an excellent work and we heartily commend its use.

**Polk's Medical Register and Directory of North America.* Eighth revised; edition. 8vo: pp. 3076. Detroit, Baltimore, Chicago. R. L. Polk & Co. 1904.

†*A Text Book of Alkaloidal Therapeutics.* By W. F. WAUGH, M.D. and W. C. ABBOTT, M.D. with the collaboration of E. M. EPSTEIN, M.D. 8vo: pp. 405. Chicago. The Clinic Publishing Co., 1904.



The St. Louis Meeting.

ADDITIONAL DETAILS WITH REGARD TO THE ANNUAL CONVENTION.

THE arrangements for the International Congress of Military Surgeons, to be held in lieu of the Thirteenth Annual Meeting of the Association of Military Surgeons of the United States, at St. Louis, on October 10th to 15th next, are well under way with every prospect of a most satisfactory Convention.

Numerous foreign governments have manifested great interest in the Congress, the following officers to represent some of the services having already been named by their several countries:

British Army—Lieutenant Colonel H. W. Murray, R. A. M. C.

British Navy—Inspector General R. W. Coppinger, R. N.

Canadian Army—Director General Eugene Fiset, A. M. S.

Guatemalan Army—Don Joaquin Yela.

Honduras Army—Don Salvador Cordova.

Indian Army—Colonel R. Hamilton, I. M. S.

Italian Army—Colonel Pietro Imbriaco.

Italian Navy—Lieutenant Colonel Luigi Abbamondi.

Mexican Army—Lieutenant Colonel Augustin Aguirre.

Nicaraguan Army.—Don Leopoldo Ramirez Mairena.

Peruvian Army—Don David Matto.

Spanish Army—Don Eduardo Cisneros Sevillano.

Spanish Navy.—Don Juan Redondo y Godino.

In addition to the events named upon the preliminary program published in the last number of the JOURNAL, the following matters of interest will be taken up. Many of the reports will be of very great interest and of high advantage in the consideration of the progress of medico-military affairs.

1. Report of the Executive Council.
2. Report of the Secretary and Editor.
3. Report of the Treasurer.
4. Report of the Literary Committee.
5. Report of the Public Service Medical School Committee.
6. Report of the Committee on Legislation.
7. Report of the Committee on Insignia.
8. Report of the Committee of Arrangements.
9. Report of the Enno Sander Prize Medal Board of Award.
10. Report of the Necrology Committee.

Twenty minute abstract on the Relation of the Medical Department to the Health of Armies. By the Enno Sander Prize Essayist.

The successful competitor has a plan for organizing the Army Medical Department on a new basis, recognizing the fact that the medical officers, like other men, differ much in capacity for performing properly the manifold duties which devolve upon them, and that in their assignments their special abilities and experience should be taken into consideration; few are or can become skilled operating surgeons, and few are or can become skilled practical sanitarians,—hence the importance of putting these specially skilled men where they are most needed.

The Russian Army Medical Service. By Lieutenant Colonel Frank Howard, A. M. S.

A discussion of the Russian Army medical service supplementary to the account given in the author's Handbook of the Medical Organisations of Foreign Armies and published in the October number of the Journal of the Military Surgeons.

Observations on the Organization and Work of the Medical Department of the Japanese Army. By *Acting Assistant Surgeon Anita Newcomb McGee, U.S.A.

The asterisk () in connection with an officer's name indicates that he is not now in active service as such.

As Supervisor of Nurses of the Japanese Red Cross Society, the author has had unusual facilities for observing the medico-military work of the Japanese, both in Japan and on the continent and in this paper she details the results of her observations.

Observations on the Russo-Japanese War. By *Major Louis Livingston Seaman, U. S. V. E.

A report of the author's personal observations in the orient during the hostilities between Japan and Russia.

The Sanitary Situation in Panama. By Colonel William Crawford Gorgas, U.S.A.

The chief medical officer of the Panama Canal Commission presents an account of his work, planned to reduce the sick-rate of the canal zone.

A Chest Wound by Krag Rifle at Fifty Yards. By Major George H. Halberstadt, N. G., Pa.

A report of a chest injury inflicted by a small caliber projectile at short range, with especially interesting features.

The Apron Stretcher,—Description and Demonstration. By Surgeon G. A. Lung, U. S. N.

Demonstration of a new stretcher devised by Surgeon G. A. Lung U.S. Navy, known as the Apron Stretcher. For general use in transporting sick and wounded, but particularly for use on board ships, ambulance service, or in confined places where it is necessary to maintain the patient in a fixed and comfortable position while being transported.

Asiatic Cholera. By *Major John A. Metzger, U. S. V.

After a brief history of the disease, the clinical picture is presented followed by a discussion of the prophylaxis, both state and personal,—closing with the treatment, and fusing the author's personal observations in connection with the disease while in the Philippines, with those of Alt, Rumpf, Dujardin-Beaumetz and Koch.

A Surgical Experience after a Venezuelan Battle. By Surgeon James Chambers Pryor, U.S.N.

Conditions found at Ciudad Bolivar, Venezuela after the battle in July, 1903. An improvised hospital. Wounds observed. Lack of a Medical Corps in the Venezuelan Army.

First Aid to the Wounded in Naval Battles. By Don Juan Redondo y Godino, Spanish Navy.

A Spanish view of aid in naval warfare by the surgeon of the "Isla de Cuba" in the battle of Manila Bay.

The Organization of the Department of Health for the Canal

Zone, Isthmus of Panama. By Medical Director John W. Ross, U.S.N.

This is an accurate and detailed description of the organized sanitary work upon the Isthmus of Panama, by the medical officer in charge.

Notes on a Case of Myeloid Sarcoma of the Head of the Tibia. By Assistant Surgeon W. C. Rucker, P. H. & M. H. S.

Case of recurrent sarcoma. History. Operations. Result. Pathological Report.

Note on the Le Tulle Autopsy Method. By Assistant Surgeon William C. Rucker, P.H. & M.H.S.

Brief review of Le Tulle's recent work, "Le Pratique des Autopsies," points of difference and superiority of the new method.

A Case of Tropical Dysentery. By *Contract Surgeon Alfred Terry Short, U.S.A.

An account of the author's first case of amoebic dysentery, in the early days of the American occupation of the Philippines.

Tubercular Adenitis with Marked Involvement of the Pancreas. By Assistant Surgeon W. J. Zalesky, U. S. N.

Report of a case with full discussion of the clinical and pathological conditions.

Some Experiences in Emergency Surgery. By Captain Robert Eddy Bell, M. V. M.

(1.) Operation for Exophthalmus due to Fracture of the Nose. (2.) Operation for Meningitis following Pneumonia (3.) Gastrotomy for Foreign Body in the Oesophagus. (4.) Two Cases of Gangrenous Ruptured Appendix.

Treatment of Upward Dislocation of the Acromial End of the Clavicle in the Tropics. By Major Peter R. Egan, U. S. A.

Report of a case, treated at Cebu, P. I., with comments upon the treatment, with especial reference to tropical conditions.

A New Field Instrument. By Lieutenant (Junior Grade) Henry Emerson Wetherill, N. M., N. G. Pa.

This is a combination instrument designed to meet the wants of Hospital Corps men, comprising in itself scissors, forceps, knife and director.

The following papers of which abstracts have not yet been received will also be presented:

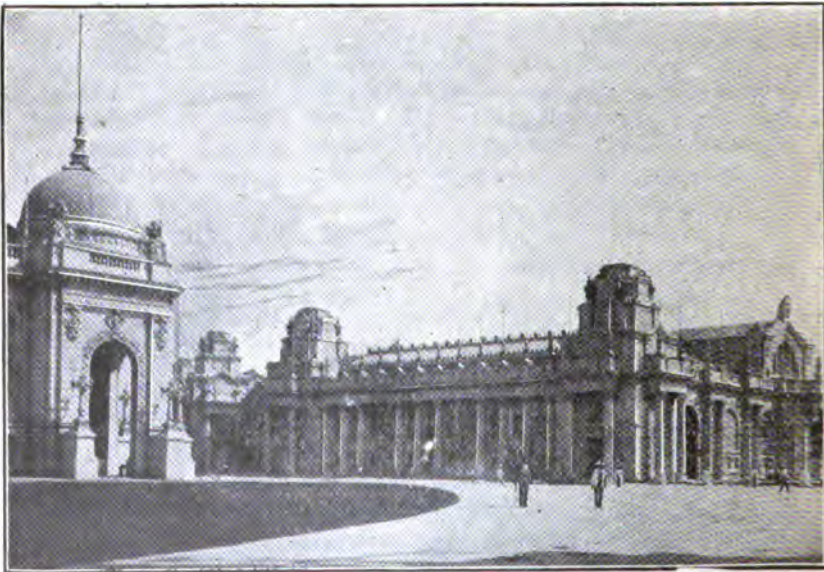
The Ambulatory Treatment of Fractures of the Lower Extremity. By Lieut. W. A. Kuflewski, I.N.G.

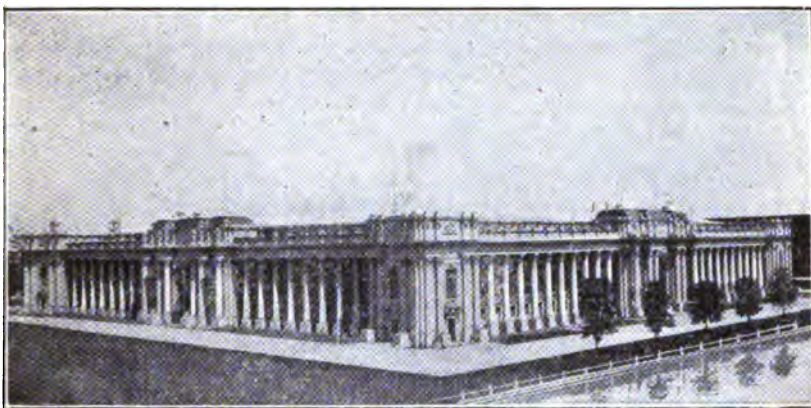
Military Hygiene, its Theoretical and Practical Study in the regular Army and Militia Forces. By Lieutenant Robert Smart, Assistant Surgeon, U.S.A.

Especial attention is again invited to the fact that all sessions of the meeting are to be held in the Hall of Congresses, just west of the Administration Building on the Exposition grounds, and that the hour for meeting of its Opening Session on Monday is 2 P. M., but that all other sessions will meet at 9 A. M. on the succeeding mornings of the week.

THE JOURNAL OF THE MILITARY SURGEONS AT THE WORLD'S FAIR.

ASIDE from its presence in the Army Hospital at the World's Fair in St. Louis the JOURNAL OF THE ASSOCIATION OF MILITARY SURGEONS will be found on file in the Library of the Emergency Hospital on the Exposition grounds. All our readers are cordially invited to visit the Hospital and to consult the JOURNAL in its Library.





The Thirteenth Annual Meeting, St. Louis, Mo., October 10-15, 1904.

MINUTES OF THE MEETING.

THE Thirteenth Annual Meeting of the Association of Military Surgeons of the United States convened at the Louisiana Purchase Exposition, St. Louis, Mo., on Monday afternoon, October 10th, 1904, taking the form of an International Congress of Military Surgeons, and continued in session upon the mornings of the five ensuing days with the following officers, members and delegates in attendance :

OFFICERS.

Medical Director JOHN CROPPER WISE, United States Navy, *President*.
 Surgeon General WALTER WYMAN, Public Health & Marine Hospital Service, *First Vice President*.
 Major ALBERT HENRY BRIGGS, Surgeon in the National Guard of New York, *Second Vice President*.
 *Major JAMES EVELYN PILCHER, Brigade Surgeon of United States Volunteers, Captain, Retired U.S.A., *Secretary & Editor*.
 Major HERBERT ALONZO ARNOLD, Surgeon in the National Guard of Pennsylvania, *Treasurer*.
 Lieutenant WILLIAM W. RENO, Assistant Surgeon in the United States Army, *Assistant Secretary*.

*The asterisk in connection with an officer's name indicates that he is not now in active service as such.

MEMBERS.

- Major Charles Adams, Surgeon, I.N.G.
 *Assistant Surgeon Adolf Alt, Prussian Army.
 Lieutenant Colonel Leonard B. Almy, Retired, Conn., N.G.
 *Major Azel Ames, Brigade Surgeon U.S.V.
 *Acting Assistant Surgeon Thomas Z. Ball, U.S.A.
 Surgeon Charles Edward Banks, P.H.&M.H.S.
 Lieutenant Colonel Edwin Bentley, Retired, U.S.Army.
 Major George C. Berkley, Surgeon Vt.N.G.
 Surgeon Henry Gustav Beyer, U.S.Navy.
 Colonel S. E. Bibby, Surgeon General of Idaho.
 *Captain Nelson Miles Black, Assistant Surgeon Neb. V.I.
 Assistant Surgeon John S. Boggess, P.H.&M.HS.
 Captain James Brew, Assistant Surgeon Tenn.N.G.
 Major Elmer W. Brown, Surgeon, Washington N.G.
 *Major William Sohier Bryant, Brigade Surgeon U.S.V.
 Lieutenant Carroll D. Buck, Assistant Surgeon U.S.A.
 *Acting Assistant Surgeon Oliver H. Buford, U.S.A.
 Surgeon Paul M. Carrington, P.H.&M.H.S.
 *Lieutenant Colonel Eustathius Chancellor, Retired, N.G.Mo.
 Lieutenant Colonel Frederick R. Charlton, Chief Surgeon Ind.N.G.
 Captain Wilbur S. Conkling, Assistant Surgeon Ia.N.G.
 *Brigadier General George Cook, Surgeon General of New Hampshire.
 Lieutenant E. G. Covington, Assistant Surgeon I.N.G.
 Lieutenant Colonel Louis W. Crampton, Deputy Surgeon General, U.S.A
 Captain Samuel M. Deal, Assistant Surgeon S.C.N.G.
 Captain Wm. T. Dodge, Assistant Surgeon Mich.N.G.
 Colonel John B. Edwards, Surgeon General of Wisconsin.
 Passed Assistant Surgeon Rudolph H. von Ezdorf, P.H.&M.H.S.
 Major David S. Fairchild, Jr., Surgeon Iowa N.G.
 Captain Harry Eugene Ferrel, Assistant Surgeon N.G.Mo.
 *Colonel Francis T. B. Fest, Surgeon General of Honduras.
 Lieutenant A. P. Fitzsimmons, Assistant Surgeon Neb.N.G.
 Surgeon James M. Gassaway, P.H.&M.H.S.
 Colonel Charles C. Godfrey, Surgeon General of Connecticut.
 *Captain David King Gotwald, Assistant Surgeon O.V.I.
 Major Lovett T. Guerin, Surgeon O.N.G.
 Major George H. Halberstadt, Surgeon, N.G.Pa.
 Lieutenant Colonel George Halley, Medical Director N.G.Mo.
 Acting Assistant Surgeon Henry J. Hamilton, P.H.&M.H.S.
 Colonel Peter Oliver Hanford, Surgeon General of Colorado.
 *Brigadier General Hugh A. Hart, Surgeon General of Ohio.

*The asterisk in connection with an officer's name indicates that he is not now in active service as such.

Major Eugene Hawkins, Surgeon Ind. N.G.
Major Frank W. Hendley, Surgeon Ohio N.G.
Major Julius F. Henkel, Surgeon Mich.N.G.
Captain George N. Hidershide, Assistant Surgeon Wis.N.G.
Lieutenant Henry Z. Hissem, Assistant Surgeon K.N.G.
Lieutenant Colonel John Van R. Hoff, Deputy Surgeon General, U.S.A
Major Olin E. Holloway, Surgeon Ind.N.G.
*Major C. H. Hughes, Surgeon Mo.V.I.
Captain James B. Hungate, Assistant Surgeon Neb.N.G.
Major Richard W. Johnson, Surgeon U.S.A.
Major Homer I. Jones, Surgeon, Ind.N.G.
Major Jefferson Randolph Kean, Surgeon U.S.A.
Colonel James M. Keller, Surgeon General of Arkansas.
Passed Assistant Surgeon John F. Kennedy, U.S.N.
Major William P. Love, Surgeon O.N.G.
*Major Charles V. F. Ludwig, Surgeon Mo. V.I.
Brigadier General Frank J. Lutz, Surgeon General of Missouri.
Lieutenant P. McDermid, Assistant Surgeon Iowa N.G.
Major James W. McMurray, Surgeon O.N.G.
Major Donald Macrae, Jr., Surgeon Ia. N.G.
Lieutenant William H. Maley, Surgeon I.N.G.
Brigadier General Otis H. Marion, Surgeon General M.V.M.
Acting Assistant Surgeon W. H. Marsh, P.H. & M.H.S.
*Major John Adams Metzger, Surgeon U.S.V.
Major Samuel Cargill Milligan, Surgeon N.G. Pa.
*Major James Cabell Minor, Brigade Surgeon U.S.V.
*Acting Assistant Surgeon Charles B. Mittelstaedt, U.S.A.
Captain Ralph W. Montelius, Surgeon N.G. Pa.
Major C. J. Montgomery, Surgeon Ga. S.T.
Major Daniel Morton, Acting Chief Surgeon N.G. Mo.
Major Henry G. Mudd, Surgeon N.G. Mo.
Captain Charles T. Newkirk, Mich. N.G.
Surgeon Charles F. Peckham, N.B., R.I.M.
Surgeon Cyrus T. Peckham, P.H.&M.H.S.
*Major G. L. Pritchett, Surgeon Neb. N.G.
Major Ogden Rafferty, Surgeon U.S.A.
Major Thomas U. Raymond, Surgeon U.S. Army.
*Acting Assistant Surgeon J. W. Richards, U.S.A.
Major Buell S. Rogers, Surgeon I.N.G.
Captain Jesse Rowe, Assistant Surgeon I.N.G.
*Major Enno Sander, E.M.M.
*Major Louis L. Seaman, Surgeon U.S.V.E.

*The asterisk in connection with an officer's name indicates that he is not now in active service as such.

Colonel Nicholas Senn, Surgeon General of Illinois.
Lieutenant William N. Senn, Surgeon I.N.G.
Captain French W. Smith, Assistant Surgeon W. Va. N.G.
Captain Samuel C. Stanton, Assistant Surgeon I.N.G.
Lieutenant Colonel Andrew S. Stayer, Division Surgeon N.G. Pa.
*Major Floyd Stewart, Surgeon U.S.V.
Surgeon Charles Francis Stokes, U.S.Navy.
Brigadier General Alexander J. Stone, Surgeon General of Minnesota.
*Colonel John E. Summers, Jr., Surgeon General of Nebraska.
*Brigadier General Marshall Orlando Terry, Surgeon General of N.Y.
Major Herman Tuholske, Surgeon N.G. Mo.
Major B. F. Van Meter, Surgeon Ky. S.G.
Assistant Surgeon General George Tully Vaughan, P.H.&M.H.S.
Captain James Peter Warbasse, Assistant Surgeon N.G.N.Y.
*Assistant Surgeon William Francis Waugh, U.S. Navy.
Colonel Joseph K. Weaver, Surgeon General of Pennsylvania.
Surgeon Charles P. Wertenbaker, P.H. & M.H.S.
Major Allen R. Wesley, Surgeon I.N.G.
Major Joseph B. Whiting, Jr., Surgeon Wis. N.G.
Major Charles C. Wiley, Surgeon N.G. Pa.
Lieutenant E. L. Woods, Assistant Surgeon N.M.N.G.
Major S. M. Wylie, Surgeon Ia. V.I.
Colonel Robert S. Young, Surgeon General of North Carolina.

FOREIGN DELEGATES.

Lieutenant Colonel Luigi Abbamondi, Italian Navy.
Lieutenant Colonel Augustin Aguirre, Mexican Army.
Inspector General R. W. Coppinger, British Navy.
Don Salvador Cordova, Honduras.
Colonel Eugene Fiset, A.M.S. Canada.
Colonel Pietro Imbriaco, Italian Army.
Colonel H. Mareschal, French Army.
Surgeon David Matto, Peruvian Army.
Lieutenant Colonel Henry W. Murray, R.A.M.C.
Captain Juan Redondo, Surgeon, Spanish Navy.
Colonel G. Sterling Ryerson, A.M.S. Canada.
Dr. Joaquin Yela, Guatemala.

*The asterisk in connection with an officer's name indicates that he is not now in active service as such.

FIRST SESSION, MONDAY AFTERNOON, OCTOBER 10, 1904.

THE opening session of the meeting convened in the Hall of Congresses of the Louisiana Purchase Exposition at 2 o'clock P. M. The Hall was handsomely decorated with bunting, and the flags of the United States and of other nations graced the walls. Upon the stage sat the President and the Secretary of the Association and Colonel Pietro Imbriaco of the Italian Army, the Dean of the foreign delegates. In the audience, in addition to the members of the Association and delegates from other countries, were numerous representatives of the Commissioners from the several nations represented at the Fair, many ladies and a large military and medical contingent from St.



The Hall of Congresses.

Louis. The celebrated 24th United States Colored Infantry Band opened the exercises with an overture, furnished selections between each of the addresses and closed the session with a march.

At the request of the President, Major James Evelyn Pilcher presided over the meeting.

An invocation was offered by Rabbi Leon Harrison, D.D., of St. Louis.

The Chairman then laid before the meeting a communication from the President of the United States expressing his regret at his inability to be present at the opening of the Congress, the letter being received by the audience standing and the band playing the national air. Announcement was made also of the

receipt of similar letters from the Secretaries of War and of the Navy and other prominent officials.

Colonel Pietro Imbriaco of the Italian Army was introduced and read in French a brief address on behalf of his own Corps and of the foreign delegates present.

Medical Director John Cropper Wise, U.S.N., was then presented to the audience and eloquently delivered the President's Annual Address upon "The Ideal Military Surgeon."

Colonel G. Sterling Ryerson of the Canadian forces was introduced and responded interestingly in behalf of the English speaking delegates.

Honorable David R. Francis, President of the Louisiana Purchase Exposition, was then introduced to the meeting and delivered a happy address cordially welcoming the members of the Congress to the Exposition, describing its organization and principal features and detailing its advantages.

SECOND SESSION, TUESDAY MORNING, OCTOBER 11, 1904.

THE meeting was called to order by the President at 9.30 o'clock A. M.

The Secretary read the report of the Executive Council which recited the work of that body during the past year, announced that the Association had been increased by the addition of 284 new members, submitted the names of a number of candidates for Corresponding Membership and Honorary Membership, presented,—to be laid over for one year,—a proposed amendment to the Constitution providing for the reduction of the annual dues to \$2.00, recommended the continuance of the insignia committee, recited the organization of the International Congress of Military Surgeons and recommended that measures be taken to secure, at the earliest possible date, an endowment of \$100,000.00 as authorized by the Act of Incorporation of the Association.

Upon motion of Captain James P. Warbasse the report of the Council and its recommendations were adopted.

The Secretary submitted his report showing that the work of the Secretariat has been progressive and constant during the year, the work of the office taking up the entire time of four

persons and a portion of the time of a number of others. He announced the publication of a new and revised edition of Volume III of the Annual Transactions which had been out of print for a number of years and which could now be obtained upon application to his office. The finances of the office involved the receipt, during the year, of \$6388.74 and the expenditure of \$6090.65, leaving a balance of \$298.09 to his credit.

Upon motion of Captain James P. Warbasse the report was adopted.

THE PRESIDENT: I can witness to the devotion and energy of the work of our Secretary during the year if any testimony be necessary in addition to this report.

The Treasurer, Major Herbert A. Arnold, then presented his report showing receipts during the year of \$9156.66, expenditures of \$3420.53, with a balance on hand of \$5736.17. The report was accompanied by an auditing certificate by a certified accountant. In connection with the finances the Treasurer also remarked:

The only statement I have to make accompanying this report is that we now have a fully paid membership vastly in excess of the entire membership of some years ago. More than 700 members,—just how many more I am unable to say at this moment,—are fully paid, and the accounts have never been in better condition as far as arrearages are concerned. The responses to statements sent out are more prompt than they were a few years ago. I wish, however, that all who attend the meetings, as far as lies in their power, at least, would see me at my desk and have a straightening up of accounts at this time. I notice that some members attend the meetings and go away again with unsettled accounts, and this should not be so.

THE PRESIDENT: This is a satisfactory and certainly a creditable account, and in conformity with custom it will be referred to the Auditing Committee.

On motion of Colonel Hoff the accounts of the Secretary and Treasurer were directed through the usual course.

The president appointed the following committees:

(1). To audit the accounts of the Secretary and Editor: Brigadier General Otis H. Marion, Assistant Surgeon General George Tully Vaughan, and Major Jefferson R. Kean.

(2). To audit the accounts of the Treasurer: Lieut. Col. Leonard B. Almy, Major Albert H. Briggs and Surgeon Henry G. Beyer.

The Secretary submitted the report of Col. J. K. Weaver, Chairman of the Literary Committee.

The report of the Public Service Medical School Committee was read by Lieut. Col. John Van R. Hoff.

On motion of Major Briggs the report was received.

THE PRESIDENT: The next order of business is the report of the Board of Award on the Enno Sander Prize Medal.

SURGEON HENRY G. BEYER, U.S.N.: The theme given out this year was "The Relation of the Medical Department to the Health of Armies." While I regret very much that our chairman, Lieut. Col. John S. Billings of the Army, is not present to give the report himself, I feel very much gratified to be in position to report the pleasant fact that we have gotten together quite a lot of very creditable work. The prize essays, in all about six in number, while each one has peculiar merit of its own, all seem to be centered upon about the same point of gravity, and I think, perhaps, it would be well to read a few extracts from the paper which received the first mention, which will be characteristic of the whole soul of that paper. The papers naturally are very long and the reading of them might become tiresome. You can read them better and with more profit after they are printed in the JOURNAL. The board was unanimous in its decision, although working in different places. They reported to the Secretary without communicating with each other and agreed upon the same two papers as entitled to the first and second award. The first prize was given to the paper under the nom de plume "In Hoc Signo Vincas," and the second prize to that marked "Onward."

The Secretary, Major Pilcher, then opened the envelopes and announced that the first prize was awarded to Lieut. Col. William Hill-Climo, Army Medical Staff (retired), London, Eng., and the second to Lieut. Col. H. Hathway, R.A.M.C., Jhansi, India.

Surgeon Beyer then read extracts from the paper of the successful contestant, and the essays were referred to the publication committee.

The scientific program was then taken up by the reading of a paper on "Further Researches into the Causes which tend to bring about Serious Accidents to Divers," by Tenente Colonello Medico Luigi Abbamondi, Royal Italian Navy, the paper being briefly discussed.

"The Medical Reserve Corps of the United States Army," was the subject of a paper read by Major Azel Ames, U.S.V., and was discussed in extenso.

The following papers, their authors not being present, were read by title and referred to the committee on publication:

"The Principles of the New Austrian Sanitary Regulations for War." By Stabsarzt Dr. Johann Steiner, Austro-Hungarian Army.

"The Sanitary Situation in Panama." By Colonel William Crawford Gorgas, U.S.A.

"The Russian Army Medical Service." By Lieutenant Colonel Frank Howard, A.M.S.

COLONEL HOFF: I had hoped that Col. Howard's paper would be read here and discussed, as it was my intention to make that the vehicle to bring before the Association certain matters in connection with the reorganization or the proposed field reorganization in connection with the Medical Department of the United States Army, which I think is a matter of the greatest importance and which I think should be discussed before this Association, and I ask, if opportunity presents, that I may be permitted to bring this matter before the Association.

Upon the request of President Wise, Col. G. Sterling Ryerson of Canada, assumed the chair.

MEDICAL DIRECTOR JOHN C. WISE: We have here a representative of Spain and he is to present a paper on emergency service in naval warfare. Before I was aware that he was to present a paper, I myself had written a critique based on observations of a number of naval battles, and as the morning's program is exhausted I shall avail myself of the privilege of present-

ing the paper at this time, although the paper is taken out of the regular order of the program.

The subject of the paper read was, "First Aid in Naval Warfare." By Medical Director John C. Wise, U.S.N. The paper was briefly discussed.

At this point Col. Ryerson relinquished the chair to President Wise.

THE PRESIDENT: Major Seaman has returned from abroad and will present a paper tomorrow morning based upon his observation and experience in the medical department of the Japanese army. The subject promises to be most interesting, one which will interest the ladies as well as the gentlemen, and if any of the members have their wives accompanying them or friends we should be glad to have them bring them tomorrow. The program is large and as we have only one session I trust you will endeavor to be present at the time set for opening the meeting.

On motion of Colonel Weaver the meeting adjourned.

THIRD SESSION. TUESDAY, OCTOBER 12, 1904.

THE meeting was called to order at 9.30, A.M.

The first paper announced for reading was that of Colonello Medico Pietro Imbriaco, Royal Italian Army, "On the Organization and Conduct of the Sanitary Service of the First Line in Modern War." The paper was advanced several numbers on the program.

THE PRESIDENT: I shall depart from the regular order of the program for a moment to introduce to you Hon. Wm. C. Maybury, Mayor of Detroit, who desires to extend an invitation to the Association to hold its next meeting in that city. (Applause.)

HON. WILLIAM C. MAYBURY: Mr. Chairman and Gentlemen: I desire to tender you a most cordial invitation to meet with us in Detroit the coming year. I might say in advance that there is no special surgery we shall wish you to perform except to cut out all care and have a good time. You may know that Detroit was once the center of military operations, but today there is only left a part of the old garrison built by Gen. Meigs who

was one of the most famous engineers of his time. Detroit is always imbued with a military spirit, and you will find that military spirit strong; and the feeling is not only for our army, but also for the redcoats across the way in the service of His Britannic Majesty. You will also see a vast commerce, greater perhaps (and I say it without being invidious), than any under our flag. It is an inspiring sight, and you will be repaid to see the stars and stripes floating above a commerce greater in value than that which enters London and Liverpool combined. You will know, gentlemen, before a word of welcome is given to you that Detroit is a hospitable city. It is of French origin as this city is. The streets are broad and you need not fear of being jostled by anybody on the sidewalks. We are very lonesome in Detroit unless we have our friends with us. [Applause.] I tender you a cordial welcome to come to our city. I am also authorized by the governor, who is on the grounds, to tender you an invitation, and if you accept the hospitality of Detroit you cannot help but be happy. [Applause.]

THE SECRETARY: Mayor Maybury has been so kind that we can do no less than to put our mark on him [fastening a badge upon his coat].

MAYOR MAYBURY: It is certainly a delightful piece of surgery. [Laughter.]

The regular program was then resumed by the reading of a paper entitled, "Observations on the Russo-Japanese War," by Major Louis Livingston Seaman, U.S.V.E.

MAJOR SEAMAN: If agreeable to the Association and if permitted by the chair, I beg leave to introduce a set of resolutions relative to the improvement of the service of the sick and wounded in the United States forces, to the increase in importance of instruction in military and naval hygiene and to the restoration of the sale of malt beverages in post exchanges.

COLONEL HOFF: I think since Major Seaman has brought in this issue it might be well to call attention to General Order No. 115, which is known as the "educational" order, and which takes in very much of what he refers to in connection with instruction in military hygiene and sanitation. General Order No. 115

prescribes that in the examination for commission of all second lieutenants military hygiene is a requisite. General Order No. 115 prescribes that in all garrison schools, which are schools organized for the instruction of officers in the army, covering a course of three years, military hygiene shall be taught. General Order No. 115 also prescribes that in the Infantry and Cavalry School at Fort Leavenworth, with which I have the honor to be connected, military hygiene shall be taught, so it will be seen that now military hygiene is requisite as a necessary part of military education and is required in the examinations for commissions. I want to express the wish that it might have been still further extended. I should have been glad if it had been recognized in what is known as the higher schools, the Staff College and War College. It was proposed at the General Staff College, as it was then called, that military hygiene should be taught, not only in the infantry and cavalry department, but also in the staff department, but I believe the authorities at Washington decided that the teaching in the infantry and cavalry schools was deemed sufficient, and the matter was left at that. I am heartily in favor of the resolution so far as it applies to reorganization and sanitary education, but I thought the Association should know exactly the status of military sanitation in the army today.

THE PRESIDENT: Gentlemen, I am of the opinion that this resolution should receive a great deal of consideration. I do not think we ought to adopt such a resolution without mature and deliberate thought. The resolution provides for the request that hygiene be added to the curriculum at West Point and Annapolis. So far as the Naval Academy at Annapolis is concerned, there is a thorough establishment of hygienic instruction. I am in full accord with the sentiment of the paper, but I think it should be referred to the Council for the purpose of giving it more mature consideration than we can give it here. The resolution proposes that our Army medical department be put in the status of the German army. I am not informed as to exactly what that status is, but I do know that I should not wish to change to the status of the German army officer. I would suggest that this resolution be referred to the Council.

MAJOR AMES: I will make a motion that it go to the Council for the reasons already given. I would have been glad at the close of my paper yesterday to have offered a resolution touching these matters, but I felt that they called for more mature deliberation than we were able to accord them here. I refrained from offering such a resolution because I believed it should be the subject of mature thought with all points carefully considered. I will therefore move that the resolution be referred to the Council of the Association.

SURGEON BEYER: I agree with the gentleman that the most thorough discussion and deliberation should be accorded to resolutions of this kind before they are accepted. While I agree in the main with the points made by Major Seaman, still I think they are immature; they should be discussed and be the subject of mature thought by every member present before they are adopted. So far as teaching hygiene and physiology is concerned, at Annapolis, it is true, I was perhaps the first to start that chair, with the intention of making it a sort of undergraduate course in hygiene, based on such experimental knowledge of physiology as we could teach the cadets. The point is right here,—while attempts have been made and have been continued ever since I left the Academy in 1896 to carry out this course, there is no law requiring this instruction. It is optional and it is apt to change with every new change of superintendent. It is not uniform, it is not continuous, it is not fixed. The subjects taught are more or less optional with the professor; he is at liberty to teach what he likes. The subjects are not sufficiently fixed; there is a looseness, a laxness about the chair which makes me place very little faith in it now. Some legislation is necessary so that when a new superintendent comes he will not be able to make these changes. At present we have no means of stopping him. He might annihilate the whole chair, and it has been partly done. I do not want the members to get the idea that it is a fixed chair, for it is not, and some legislation is necessary to preserve its life.

GENERAL STONE: I wish to amend the motion made by Major Ames that the resolutions be referred to the Council for

recommendations, with instructions to report to the Association at its Friday morning session.

MAJOR AMES: I will accept that amendment.

THE PRESIDENT: I think the time for pressing this resolution is a little inopportune. It is a subject requiring a great deal of study. I think it should go to the Council but it should receive the most mature deliberation at its hands. I think Dr. Beyer is mistaken in his statement that the instruction in hygiene at the Academy is not a matter of statute law. It is a matter of law. Let that be as it may, my own idea is that this is something that requires very serious and lengthy consideration and deliberation. I would suggest that the original motion only prevail.

MAJOR AMES: I accepted that amendment and I did it because I can conceive no time better than the present for the consideration of subjects of so grave importance. No man knows how soon the time of war may come upon the nation. The conditions described by Major Seaman call for a remedy, and that remedy must come largely by the consensus of opinion of such a body as this, and therefore I do not believe we can address ourselves more advantageously to the business than on a special occasion like this. I feel that our duty here and now is to consider matters that may come before us, and especially matters of this character that have such grave importance. That is why I am ready to accept the amendment. I do not think it would be well to carry this matter over for another year, for the personnel of the attendance changes from year to year, and I think there will be ample time for the Council to consider the resolutions if carried over until Friday.

SURGEON BEYER: So far as the teaching of hygiene at the Naval Academy being a matter of statute law is concerned, it is simply temperance physiology, that is legally required.

GENERAL STONE: I wish to call attention to the fact that the resolutions cover more than one point, whereas the discussion is only upon one feature contained in the resolutions, and the Council can select such points as they may wish to report upon. The purpose of the amendment I offered, which is now a part of the original motion, was that the Council be requested to report

these resolutions with recommendations at the Friday morning meeting. It is not necessary for these resolutions to lie over an entire year, but there is ample time to consider them in the following four days.

THE PRESIDENT: I do not think the consideration of the questions can be separated. I deprecate the way in which these resolutions are pushed. It is with great difficulty that we get the Council together; we have very few members of the Council present, and I predict it will not be as ably considered as if it were left to the Council for maturer consideration. As I understand the motion it is to the effect that the resolutions offered by Major Seaman be referred to the Council with instructions to report to the Association on Friday morning.

GENERAL STONE: With the addition that they report their recommendations to the Association on such propositions contained in the resolutions as they may deem fit.

The motion as amended having been duly seconded was put to a vote and prevailed unanimously.

COLONEL HOFF: I have another resolution of a similar character which I desire to offer, with the motion that it take the same course as the preceeding resolution.

THE PRESIDENT: I think that would be legitimate, but in offering these resolutions we have drifted from the consideration of our scientific program.

COLONEL HOFF: The resolution I wish to present is a very important one.

THE PRESIDENT: If there is no objection the resolution will be received.

Colonel Hoff then submitted his resolutions with a motion that they be referred to the Council to report at the Friday morning session:

The motion of Colonel Hoff being put to a vote the resolution was referred to the Council with instructions to report at the Friday morning session.

The authors of the following papers not being present the papers were read by title and referred to the publication committee:

"The Organization of the Department of Health for the Canal Zone, Isthmus of Panama." By Medical Director John W. Ross, U.S.N.

"The Use of Trained Dogs in Searching for and Carrying Aid to the Wounded on the Battlefield." By Lieutenant Charles Norton Barney, U.S.A.

"The Naval Hospital Ship 'Relief.'" By Surgeon William C. Braisted, U.S.N.

"The Medical Officer in Campaign." By Major P. J. H. Farrel, I.N.G.

"The Canteen in the Military Service." By Brigadier General Jefferson Davis Griffith, N.G. Missouri.

"The Medical Corps of the United States Navy,—some Details Respecting its Past and Present." By Passed Assistant Surgeon James Nevins Hyde, U.S.N.

Brigadier General Otis H. Marion then read a paper upon the subject of "The Sanitary Sergeant."

This was followed by a paper entitled, "The United States Naval Medical School." by Medical Director Robert Augustine Marmion, U.S.N., the paper being read, in the author's absence, by Surgeon Charles F. Stokes, U.S.N.

The following papers by French authors were read by title and referred to the committee on publication:

"Radiography in Armies in the Field." By Colonel H. Mareschal, French Army.

"The Employment of the Automobile in Sanitary Service at the Front." By Colonel H. Mareschal, French Army.

"The General Principles of the Installation of Hospital Service in Contagious Diseases." By Major J. Simonin, French Army.

A paper was presented by Surgeon Charles Francis Stokes, U.S.N., on the subject of "Some Features of the Immediate Treatment and Transport of the Wounded in Naval Warfare." A demonstration was given with appliances and the paper elicited prolonged discussion.

"The Surgeon of the National Guard," was the title of a paper presented by Major Ralph W. Montelius, N.G. Pa.

"The Apron Stretcher,—Description and Demonstration," was submitted by Surgeon G. A. Lung, U.S.N., through Passed Assistant Surgeon John F. Kennedy.

THE SECRETARY: I have in my hand the report of the Auditing Committee on the Treasurer's Report, and they pronounce it correct and properly vouched.

On motion of Colonel Hoff the meeting adjourned.

FOURTH SESSION. OCTOBER 13, 1904.

THE meeting was called to order by President Wise, who asked for the report of the Council.

The Secretary, on behalf of the Executive Council, reported favorably upon the following modification of the resolutions which had been submitted the day before:

Resolved, That the Association of Military Surgeons of the United States now assembled, respectfully petitions Congress at its next session to reorganize the Medical Departments of the United States Army and Navy on a broad basis similar to that of the countries most advanced in military sanitation, giving to their officers equivalent rank, dignity and power, and to their personnel ample numbers for the proper care of the ill and injured in military and naval service.

Resolved, That this Association recommends that the sale of beer be permitted at Army post exchanges subject to such regulations as shall be determined by the General Staff and the Secretary of War.

Resolved, That while appreciating the fact that military sanitation has finally been introduced into the general scheme of military instruction and has been made a requirement in the examination of Second Lieutenants for promotion, nevertheless this Association believes that an adequate knowledge of "the care of troops" is of such vital importance to our Army that it should be given adequate recognition in all our Army and Navy schools and especially in the Staff College and War Colleges, and that the present courses at West Point and Annapolis should count in the requirements for graduation; it therefore respectfully petitions the President to make this resolution effective.

Whereas, The proposed Field Service Regulations, U.S. Army provide for Field Hospital accommodations of but 216 beds, with a personnel of but 8 Medical Officers, 16 non-commissioned officers and 82 privates for a *Division*, numbering approximately twenty thousand men.

Whereas: The experience of the best organized armies of the world shows that this allowance is much below the actual requirements,

Germany having 1200 beds with 54 officers and 282 men per Div'n

France	"	400	"	"	44	"	560	"	"
Great Britain	"	300	"	"	15	"	201	"	"
Russia	"	840	"	"	36	"	428	"	"
Japan	"	1200	"	"	48	"	648	"	"

and

Whereas, The said proposed Field Service Regulations U.S. Army provides for a *Divisional Ambulance Establishment*, the personnel of which numbers but 6 officers, 16 non-commissioned officers and 122 men, while that of

Germany	numbers	14	officers,	16	non-com'd	officers	and	230	men
France	has	14	"	25	"	"	"	192	"
Great Britain	"	8	"	32	"	"	"	170	"
Japan	"	13	"	61	"	"	"	342	"
Russia	"	6	"	and 285 men.					

Therefore :

Resolved, 1st. That this Association of Military Surgeons of the United States respectfully represent to the President of the United States through the Secretary of War, member of our Advisory Board, the facts as above set forth.

Resolved, 2d. That the President be respectfully petitioned to direct that the military authorities provide a field medical organization for our army at least equal in all respects to the best that exists in any army, and which will meet the approval of military sanitarians generally, to the end that our sick and wounded in future war may receive adequate care and attention.

Resolved, 3d. That immediate action be taken to bring this matter before the President, so that a proper medical organization can be prescribed in the aforesaid Field Regulations, which are

now about to be issued, and which it is the hope of this Association he will not permit to be published until said proper medical organization is provided for.

THE PRESIDENT: You understand that this is a report on the resolutions referred to the Council yesterday.

On motion of Colonel Weaver the report of the Council was unanimously adopted.

On motion of Acting Assistant Surgeon W. H. Marsh, P.H. & M.H.S., the President was instructed to limit the reading of papers to twenty minutes each during the balance of the meeting.

The scientific program was then taken up with the reading of a paper entitled, "Medication on the Firing Line," by former Assistant Surgeon W. F. Waugh, U.S.N., which was discussed at some length.

The subject of "First Aid to the Wounded in Naval Battles," a paper advanced from the last day's program, was presented by Don Juan Redondo y Godino, Spanish Navy, and elicited extended discussion.

Captain S. C. Stanton submitted the report of the Committee on Necrology.

In order to save time the authors of the following papers requested that they be read by title and submitted to the committee on publication:

"An Hour with Dr. Thomas Trotter, Physician to the Fleet." By Medical Director John C. Wise, U.S.N.

"John Markham Marshall Ambler, U.S.N." By Medical Director John C. Wise, U.S.N.

"Army Medical Officers who have Become Secretaries of War." By Major James Evelyn Pilcher, U.S.V.

A paper was read by Captain James P. Warbasse, N.G.N.Y., entitled "Some Observations on the Treatment of Fracture," and briefly discussed.

THE PRESIDENT: We shall depart from the program for a few moments, and in accordance with custom, present to the foreign delegates in attendance the badge of the Association. If these foreign delegates are with us this morning I will ask them

to come forward and the Secretary will present them with the badges.

Those responding were Colonel Eugene Fiset, Director General Canadian Army Medical Staff; Inspector General R. W. Copinger, British Navy; Colonel Henry Hamilton, British Indian Medical Service; Don Juan Redondo, Surgeon Spanish Navy; Colonel H. Mareschal, French Army; Colonel H. W. Murray, Royal Army Medical Corps; Colonel Salvador Cordova, Surgeon General, Honduras; Don Joaquin Yela, Guatemala; Don David Matto, Peru; Colonel Pietro Imbriaco, Royal Italian Army; Lieutenant Colonel Luigi Abbamondi, Royal Italian Navy.

THE SECRETARY, MAJOR JAMES EVELYN PILCHER,—One of the most important functions of the Association of Military Surgeons of the United States from the beginning has been the bringing of the military medical service of the United States into contact with the similar services of our brother countries. We feel that there is much to be learned from our friends of other nations, and we hope that we may at some time have something which they may think worth while to learn from us. In course of our work it has been the custom, so far as possible, each year to invite other nations of the world to send to our meetings representatives of their medical services in order that we might gain by social contact and by getting new ideas of medico-military conduct, and also in the hope that we might contribute something of value to them. We have then always endeavored to make this relation prominent. In order better to accomplish this, some years ago a class of Corresponding Members was established in our Association, and it is now our custom to elect foreign delegates to corresponding membership in the Association; this makes them members for life, recipients of our publications and continuously identified with our work.

I have the honor to hand you the diplomas of corresponding membership in the Association which, I trust, you will find of some interest and possibly of some value to you in your future work.

Colonel Fiset, as Director General of the Army Medical Department of our neighboring and sister country of Canada I have

the very great pleasure of handing you the decoration of our Association. [Applause.]

General Coppinger, you are the first representative of the Royal Navy we have ever had among us, and I trust in receiving this decoration you will accept it as a token of the high appreciation and regard in which we hold your service. [Applause.]

Colonel Hamilton, we have for a long time been in sympathy with the Indian Medical service; but recently the United States has found it necessary also to go into the tropical regions, for which reason we take especial pleasure in conferring this decoration upon you. [Applause.]

Captain Redondo, it is only a very few years since Spain and the United States of America were bearing arms upon opposite sides. You were connected with the medical department in active service in an action in which we were also engaged. We honor your bravery, we honor the bravery of your countrymen, and we appreciate you all the more highly because of the relations which have existed between us. We trust in conferring this decoration upon you that it may be a lasting memento of future peaceful relations, not only between your country and ours but also between you and the Association of Military Surgeons of the United States. [Prolonged applause.]

Colonel Mareschal, we have always had a strong fellow feeling for France. From France we received Larrey and Percy and to France we owe the beginnings of the field hospital; we hold her in high honor and respect, and we have very great pleasure in honoring ourselves by conferring upon one of her most distinguished officers the insignia of the Association of Military Surgeons of the United States. [Applause.]

Colonel Murray, it is hardly necessary to speak of the brotherhood and fraternity which exists between the Royal Army Medical Corps and the medical service of the American Army. We speak the same language, we think along the same lines and we might almost feel that we belong to the same body of workers. It is then with cordial pleasure that I have the honor of conferring upon you the decoration of the Military Surgeons of the United States, trusting you may wear it from time to time, and

that it may prove a reminder of the kind regard in which you and your service are held by us all. [Applause.]

Colonel Imbriaco and Colonel Abbamondi, Italy has been known since the days of the Roman Empire as one of the most important of warlike countries, and for that reason it affords us particular pleasure to confer upon you the insignia of this Association, which we trust your government will permit you to use, and which we hope you will feel inclined to wear as a token of the cordial relations that have been established between yourselves, your country and this Association. [Applause.]

Dr. Matto, we are of the same hemisphere, although Peru is not our immediate neighbor, yet there is much that is of interest between Peru and all of the Latin-American countries and ours, for which reason we are particularly glad to recognize you as a corresponding member of our Association, in evidence of which I hand you this badge. [Applause.]

Colonel Cordova, your country, Honduras, and ours are practically neighbors. Central America and the United States form part of the great North American continent, of which your own country is so important a feature, and we are delighted to feel that we have now established a fixed relation with you. We learn that you are about to establish a permanent military medical department in your country; we trust the effort will be successful and assure you that any assistance the military surgeons of this country may be able to extend to you will be extended most willingly and gladly. [Applause.]

Dr. Yela, we are most happy to recognize you and your country (Guatemala), and in conferring upon you this decoration of the Association of Military Surgeons of the United States we hope to establish closer relations and to count you as a perpetual friend. [Applause.]

INSPECTOR GENERAL R. W. COPPINGER: I should like to say on behalf of the Medical Department of the British Navy which I have the honor to represent, that I appreciate in the highest degree the honor conferred in being made a member of this distinguished Association. [Applause.]

LIEUT. COLONEL H. W. MURRAY: On behalf of the Royal Army Medical Corps, to which I belong I desire to express the deep sense of honor I feel in being presented with this diploma and the badge of the Association of Military Surgeons of the United States. It is a pleasure to be here. For the past few years I have been an associate member of the Association and it always gives me the greatest pleasure to meet my brothers,—and I may call you my brothers,—of the United States Army. I thank you. [Applause.]

COLONEL EUGENE Fiset: As Director General and in behalf of the officers of my service I desire to thank you for the kindness you have done me in making me one of your corresponding members, and I must say that it is with the greatest pleasure I accept the distinction you have placed upon me in conferring this diploma and the decoration of your Association. [Applause.]

COLONEL H. HAMILTON: I also wish to offer my sincerest thanks in behalf of the English Indian service for the honor you have conferred upon me. [Applause.]

CAPTAIN JUAN REDONDO: I thank the Association of Military Surgeons of the United States for the honor conferred in placing upon me this decoration. [Applause.]

COLONEL H. MARESCAL: In behalf of the Medical Department of the French Army I wish to express my deep sense of gratitude for the honor which has been bestowed upon me. [Applause.]

The consideration of the scientific program was then resumed, and in the absence of the author a paper entitled "A Sanitary Study of Culebra, U.S.W.I., as a Naval Base," by Medical Inspector Howard E. Ames, U.S.N., was read by title and referred to the committee on publication.

A paper on "Camp Sanitation" was presented by Major Herbert A. Arnold, N.G.Pa.

"Military Hygiene; its Theoretical and Practical Study in the Regular Army and Militia Forces" was the subject of a paper by Lieutenant Robert Smart, U.S.A., which was read by title and referred to the publication committee.

Surgeon Henry G. Beyer, U.S. Navy, submitted a paper detailing "An Improved Method of Standardizing the recruit," which elicited prolonged discussion.

THE PRESIDENT: I take great pleasure in announcing that Major Seaman has offered a prize to the Association,—“The Seaman Prize,” of \$500 for an essay upon “The Prevention of Disease in the Army and the Best Method of Accomplishing that Result.” He has named as a Board of Award Brig. Gen. Geo. M. Sternberg, U.S.A.; Colonel J. W. Powell, U.S.A., Lieutenant Colonel John Van R. Hoff, U.S.A., Lieutenant Colonel N. S. Jarvis, N.G.N.Y. and Medical Director John C. Wise, U.S.N. I hope this will meet with your approval. [Applause.]

Brigadier General Otis H. Marion, on behalf of the Auditing Committee reported the accounts of the Secretary and Editor as correct and properly vouched.

The scientific program was again resumed by the reading of a paper with demonstrations upon the subject of “Practical Hearing Tests,” by Major William Sohier Bryant, U.S.V., which was briefly discussed.

The following papers were read by title and referred to the publication committee:

“Malingering,” by Lieutenant Samuel M. DeLoffre, U.S.A.

“Gymnastics and Athletics, with Especial Reference to Foot-ball.” By Colonel Valery Havard, U.S.A.

A paper entitled “The Pneumonia Problem,” was submitted by Surgeon Charles Edward Banks, P.H.&M.H.S, and called forth a short discussion.

THE PRESIDENT: I wish to say that we are fortunate to have with us this morning a gentleman of international reputation who has just returned from abroad, and I ask you to welcome Colonel Senn.

The business of the meeting was informally suspended for a few minutes while the members and friends of the Association tendered Colonel Senn an ovation.

COLONEL SENN: One of the objects of this meeting is to consider the feasibility of the organization of an international congress of military surgeons. For the purpose of bringing the

matter before the members of this Association in an intelligent form I wish to make a motion to the effect that the chair appoint a committee to be made up of a delegate from every foreign delegation, and one each from the Army, Navy, the Public Health and Marine Hospital Service, the United States Volunteers and the National Guard.

The motion was duly seconded and, being put to a vote, prevailed unanimously.

THE PRESIDENT: The chair will announce the names of the committee a little later.

The stated program was then resumed by the presentation of a paper on the , 'Treatment of Abdominal Injuries with Special Reference to Gunshot Wounds of the Liver,' by Colonel J. E. Summers, Jr., former Surgeon General of Nebraska, and was briefly discussed.

On motion of Major Briggs the meeting adjourned.

FIFTH DAY'S SESSION, FRIDAY, OCTOBER 14, 1904.

THE meeting was called to order by the President and business matters of the Association were considered preceding the scientific program.

The chair announced the following personnel of the committee to consider the organization of an International Congress of Military Surgeons:

Surgeon General Walter Wyman, P.H.&M.H.S.; Colonel Pietro Imbriaco, Italian Army; Captain Juan Redondo, Spanish Navy; Inspector General R. W. Coppinger, British Navy; Don Joaquin Yela, Guatemala; Don Salvador Cordova, Honduras; Don David Matto, Peru; Colonel H. Mareschal, French Army; Colonel G. Sterling Ryerson, Canadian Forces; Colonel Augustin Aguirre, Mexico; Colonel John Van R. Hoff, U.S.A.; Surgeon Henry G. Beyer, U.S.N.; Colonel Nicholas Senn, Ill. N.G. and Major James Evelyn Pilcher, U.S.V.

Upon motion of Colonel Hoff, the following resolution was adopted:

Resolved, that no badges or decorations shall be worn at

future meetings of the Association of Military Surgeons of the United States, except those authorized by law.

The motion being put to a vote, the resolution was unanimously adopted. The effect of this action is to put an end to the use at future meetings of local badges.

The scientific program being resumed, Surgeon Paul M. Carrington, P.H.&M.H.S., presented a paper on the subject of "Altitude and Expansion," which was exhaustively discussed.

"The Need and Advantages of a Permanent International Congress of Military Surgeons" were presented by Colonel Nicholas Senn, Surgeon General of Illinois.

The Secretary announced the following representation of membership on the Nominating Committee together with the members constituting the committee:

Army.....	33 votes,	Col. Hoff
Navy	16 "	Surgeon Beyer
P. H. & M. H. S.....	11 "	A. S. G. Vaughan
Arkansas.....	1 "	Col. Keller
Connecticut.....	2 "	Col. Almy
Idaho.....	1 "	Col. Bibby
Illinois.....	5 "	Capt. Stanton
Indiana.....	1 "	Col. Charlton
Massachusetts.....	4 "	Gen. Marion
Michigan.....	1 "	Maj. Henkel
Minnesota.....	1 "	Gen. Stone
Missouri.....	2 "	Col. Halley
Nebraska.....	1 "	Capt. Hungate
New Hampshire.....	1 "	Gen. Gook
New York.....	6 "	Maj. Seaman
Ohio.....	4 "	Maj. Guerin
Pennsylvania.....	4 "	Col. Weaver
Rhode Island.....	1 "	Lieut. Peckham
Vermont.....	1 "	Maj. Berkley
Washington.....	1 "	Maj. Brown
Wisconsin.....	1 "	Gen. Edwards.

The Secretary read invitations from the following cities desiring the next annual meeting:

Colorado Springs, Colo.; Niagara Falls, N. Y.; Columbus, Ohio; Duluth, Minn.

An invitation was also tendered the Association by the Anheuser-Busch Brewing Association to visit its plant.

The scientific program was again taken up and the following papers were read by title and referred to the committee on publication:

"The Common House Fly as a Factor in the Spread of Tuberculosis." By Surgeon J. O. Cobb, P.H.&M.H.S.

"Pulmonary Tuberculosis, its Diagnosis and Course under Favorable Climatic Conditions." By Dr. Edward D. Sinks, U.S.A.

"The Dangers of Unrestricted Traveling of Consumptives." By Assistant Surgeon John W. Trask, P.H.&M.H.S.

"Asiatic Cholera." By Major John A. Metzger, U.S.V.

"Notes on a Case of Myeloid Sarcoma of the Head of the Tibia." By Assistant Surgeon W. C. Rucker, P.H.&M.H.S.

"Note on the Le Tulle Autopsy Method." By Assistant Surgeon William C. Rucker, P.H.&M.H.S.

"A Case of Tropical Dysentery." By Contract Surgeon Alfred Terry Short, U.S.A.

"Tubercular Adenitis with marked involvement of the Pancreas." By Assistant Surgeon W. J. Zalesky, U.S.N.

A paper was then read on the subject of "Fracture of the Radial Head," by Surgeon Charles Edward Banks, P.H. & M.H.S.

At the request of the President, General Wyman temporarily assumed the duties of the chair.

Advanced from Saturday's program, a paper was presented upon the subject of "Removal of Bullets Lodged in the Sphenomaxillary Fossa," by former Passed Assistant Surgeon Lewis Stephen Pilcher, U.S.N., which was discussed at some length.

The author not being present, the following paper was read by title and referred to the publication committee:

"Some Experiences in Emergency Surgery." By Captain Robert Eddy Bell, M.V.M.

A paper on "Stokes-Adams Disease," was presented by Captain James Brew, N.G. Tenn.

"A Chest Wound by Krag Rifle at Fifty Yards," was reported by Major George H. Halberstadt, N.G. Pa., which elicited some discussion.

"The Operation for Radical Cure of Varicocele," by Lieut. Col. Augustin Aguirre, of Mexico, was read for the author by Captain S. C. Stanton and elicited a brief discussion.

On motion of Colonel Hoff the meeting adjourned

SIXTH SESSION. SATURDAY, OCTOBER 15, 1904.

THE meeting was called to order by the President and the consideration of the scientific program was immediately taken up.

The first number on the program was the "Report of a Case of Acute Rheumatic Fever as Treated by John O'Connor, M.A., M.D., by His Surgical Treatment for Acute Articular Rheumatism." by Passed Assistant Surgeon J. Benjamin Dennis, U.S.N., which was read by title and referred to the committee on publication.

"A Case of Perforating Gunshot Wound of the Stomach, Operation, Recovery," was reported by Dr. Charles A. Mittelstaedt, U.S.A., which was discussed at some length.

The following papers were read by title and referred to the publication committee:

"A Surgical Experience after a Venezuelan Battle." By Surgeon James Chambers Pryor, U.S.N.

"The Operation for Radical Cure of Congenital Inguinal Hernia." By Passed Assistant Surgeon A. C. Smith, P.H. & M.H.S.

A paper upon "Gunshot Wounds of the Ureter—Two Cases of Uretero-Vesical Anastomosis," was submitted by Assistant Surgeon General George Tully Vaughan, P.H. & M.H.S.

The following papers were read by title and referred to the committee on publication:

"Remarks on the Clinical Aspects of Cavite Fever." By Medical Director Remus Charles Persons, U.S.N.

"The Field Hospital for Use with Cavalry." By Lieutenant John Ryan Devereux, U.S.A.

"The Ambulatory Treatment of Fractures of the Lower Extremity." By Lieutenant W. A. Kuflewski, I.N.G.

"Tetanus." By Dr. Vernon MacCammon, U.S.A.

"The Quarantine of the Isthmian Canal." By Surgeon Henry R. Carter. P.H. & M.H.S.

THE PRESIDENT: I wish on behalf of the Association to extend to the foreign delegates our thanks for their presence here

during our meeting. Their active participation, their constant presence, the value of their papers and the way in which they entered into the discussion has been a large factor in the success of this Congress. I very much hope that the project proposed by Colonel Senn will be carried out and that we shall have the opportunity of meeting each other in a future congress. It is pleasant to remember that, although we are separated by wide distances, we are all engaged in the same line of work and in the pursuit of a noble calling. [Applause.]

The report of the Nominating Committee was then submitted by Captain Samuel C. Stanton, I.N.G., Secretary of the Committee, as follows:

For President, Surgeon General WALTER WYMAN, P.H. & M.H.S.

1st Vice President, Major ALBERT H. BRIGGS, N.G.N.Y.

2nd Vice President, General ROBERT M. O'REILLY, U.S. Army.

3rd Vice President, Admiral PRESLEY M. RIXEY, U.S. Navy.

Treasurer, Major HERBERT ALONZO ARNOLD, N.G. Pa.

For place of meeting, DETROIT, MICH.

Time of next meeting, to be fixed by the Executive Council.

The *Secretary* of the Association being a permanent official no nomination is made, the office being continuously held by Major JAMES EVELYN PILCHER, U.S.V.

On motion of Major Seaman the report of the Nominating Committee was unanimously adopted.

The President named Colonel Senn as a committee of one to escort the President-elect Surgeon General Wyman to the chair, and the appearance of the new president was greeted with generous applause.

THE PRESIDENT: Gentlemen, I have great pleasure in presenting to you my successor. An introduction is not necessary. I can with the greatest confidence turn over the affairs of the Association to my distinguished and able successor, being assured by his election of the continuance of our present progress in military medicine and surgery. [Applause.]

THE PRESIDENT-ELECT: Mr. Retiring President and Gentlemen: It is needless for me to say that I feel very greatly the honor of this election. I wish to return my sincere thanks for the honor conferred upon me personally and upon the Service which I represent.

There is something peculiar about this organization which makes it particularly delightful to belong to it. I have felt so ever since I first became associated with it, and that feeling has been continually on the increase.

Under the guidance of our retiring president we have had a most successful year. We have had a most successful meeting here, and the papers which have been read and the discussions which have followed them will make this annual meeting stand out prominently in the history of this organization. Every one of us must have felt,—as we listened to the papers and heard the discussions,—we must have realized the practical and scientific value of these meetings, so that I feel peculiar pride in being one of the first members of this organization.

We have also had in connection with this meeting another very pleasing feature, and that is the presence of the first president of the Association, Colonel Senn, who, as you may not all know, timed his arrival after thirty thousand miles of travel to come here and be with us at this meeting before he even returned to his home in Chicago. [Applause.]

As to the coming year, I hope to demonstrate my appreciation of the honor you have conferred upon me by working strenuously for the continued success and prosperity of the organization.

I believe that the choice of Detroit as our next meeting place is a very wise one. It is a beautiful city, the invitation to go there came to us in a very delightful and courteous manner, and I want to appeal to each one of the members here to do all that is within his power during the coming year to advance the interests and the membership of the Association.

Before entertaining a motion to adjourn there is one little matter I wish to speak of in connection with the work before us, and that is with reference to this international organization that has been proposed and for the carrying out of which organization a committee has been appointed. In accordance with the suggestion of Colonel Senn, which I think is a very wise one, I believe it would be deemed advisable to consider the committee which has been appointed as a permanent committee, at least un-

til the Association declares otherwise, because the work of that committee must extend over a considerable period of time. At any rate we cannot have a report from that committee until the next annual meeting, and in the meantime its members could communicate with each other and have a meeting prior to our next annual meeting to determine upon the best manner in which an international organization could be brought about. [Applause.]

MAJOR MONTELIUS: It is evident from the reports submitted by the Auditing Committees that our financial affairs are in elegant shape. The JOURNAL edited by Major Pilcher, gives evidence of the fact that a great deal of time and careful labor is expended upon it as well as upon the regular work of the Secretary's office, and I beg therefore to make a motion that the honorarium of the Secretary be increased by the addition of \$500.00 a year. The motion was numerously seconded and being voted upon prevailed unanimously.

THE PRESIDENT: I am sure we are very heartily in accord with that resolution.

If there is no further business to be brought before the meeting I will entertain a motion to adjourn.

On motion of Major Seaman the meeting adjourned *sine die*.



The Opening Session.

After an overture by the 24th United States Infantry Band, MAJOR JAMES EVELYN PILCHER having been called to the chair by the President, the exercises were opened by an—

INVOCATION,

BY THE REV. LEON HARRISON, D.D.,

CHAPLAIN IN THE NATIONAL GUARD OF MISSOURI.

ALmighty GOD, pour out thy benediction upon these thy servants that are striving for the healing of men, and for their physical soundness and for their strengthening. We ask Thee, O ! God of Battles, bless these thy children, that through the struggle itself may be brought about a lasting reign of peace. And grant, in thy wisdom, unto these earnest men that they may find the path of wisdom and learn more largely the way of healing and the way of strengthening.

Upon their spirits rain Thou thy compassion, that they may have pity upon the suffering and lessen their pain, and may they school themselves in the endeavor to lessen human misery. And though they are serving in the cause of war, yet through them, we pray Thee, bring about the day when they and all men shall realize the devilishness of bloody slaughter and learn the way of peace; when the sword shall be beaten into the ploughshare and the spear into the pruning hook; when nation shall not lift the sword against nation, neither shall they learn war any more, and their mouth shall be filled with a knowledge of good as the waters cover the sea. Amen.

THE CHAIRMAN: As Governor Francis, who is on the program for an address to the Association, is delayed for a few moments, I have the pleasure at this point of introducing to the audience Colonel Pietro Imbriaco a distinguished surgeon of Italy, who will speak in behalf of the foreign delegates.

THE FOREIGN DELEGATION AND THE ITALIAN
REPRESENTATION.

By COLONEL PIETRO IMBRIACO,

MEDICAL DEPARTMENT ROYAL ITALIAN ARMY.

IT is my honor to salute this Association in the name of the Sanitary Corps of the Italian Army and the Foreign Delegates present at this Congress. When our Minister of War was pleased to choose me to represent my colleagues of the Army at this Congress I hesitated in accepting the great honor bestowed upon me. I, an obscure worker in the modest field of military medical practice feared, and I now fear, that with my imperfect knowledge of your tongue, I may fail worthily to discharge my mission.

But I am made bold by my great desire to know intimately this marvellous country in which the exuberant energy of a people has reached its highest development and a natural tendency toward things positive and practical has in no wise impeded the evolution of the purest ideals of science and art.

This occasion was rendered to me the more seductive by the fact that I should be enabled to behold this wonderful Exposition which furnishes added proof that this is in truth the land of initiative and of stupendous undertakings.

For us Italians the United States holds an especial attractiveness. Here may not only our humble day laborer find work and bread, but our artist turns hither encouraged by the reception which greets his efforts, and our scientist comes, confident of a wider field for the application of his invention. And therefore it is not only with a sense of deep admiration that we natives of the classic land of Columbus and Vespucci greet you, but also with a feeling of sympathy and gratitude.

It is fitting that a movement with the exalted aim of an international fellowship between military sanitary institutions should take root and mature in this country. The spirit of humanitarianism, which characterizes our times and which reached its noblest manifestation in the Convention of Geneva, and new military systems and modern armaments, necessitating corres-

ponding facilities for the care and succor of the wounded in war, render necessary a reform in the organization of military sanitary service in order that progress may be uniform throughout the armies of the world. I am deeply gratified then to be permitted to attend a Congress which has in its program to cooperate with views of so philanthropic a character.

Gentlemen, before I retire, permit me to express my best thanks to this honorable Association for its courteous and welcome invitation, to the authorities, and to my colleagues of the glorious Army of the United States for their cordial and gracious reception.

THE CHAIRMAN: I have the pleasure of presenting one more officer representing a large foreign contingent, an officer who is not only a member of a foreign service of distinction, and who has not only seen war service and won distinction in other countries than his own, but who is also a man who has recognized the value of this Association almost since its beginning by being identified as an associate member. I present to you, as representing the great English speaking world, Col. G. Sterling Ryerson of the Canadian forces. [Applause.]

THE ENGLISH SPEAKING FOREIGN DELEGATES.

BY COLONEL G. STERLING RYERSON,
ARMY MEDICAL SERVICE OF CANADA.

I CAN assure you this is a very unexpected honor. I came here today in a semi-official capacity to attend the meeting of this very interesting and useful organization. The service to which I have the honor to belong is represented by the Director General of my department, but owing to unfortunate circumstances in the way of railroad transfer he is lamenting the loss of a kit. Some of us have lost our kits for all time and some for a day or two. I am sure our Director General will be in a position to present himself to you in a day or two.

Perhaps while I am on my feet, I should say how very greatly I appreciate the service of this association. It seems to me that of any service that can be beneficial to humanity that of the medical profession is the greatest. Heroes are usually those that are killed. We do not make a hero of a butcher or a slaughterer, but we make a hero of the soldier who makes a business of kill-

ing the most men in the shortest time and with the least expense to the country. The doctor who goes out on the battlefield sees only the embodiment of misery, and he is relegated to the background except on special occasions; he usually follows the rut of the army, and it follows that he gets a good deal of dust. That has been my experience.

I think an organization such as you have here will be able to raise his status with regard to his relation to the army, and you will be able to present yourselves to the public in your true light, and you will be able to appear to the world in the way in which it should regard you. The object of the profession in the organization of this association is one that deserves the support of every medical officer, not only in the United States, but in every foreign country.

While we are of different nationalities, we have only one object in view, the benefit of humanity, and that is what the medical officer stands for, no matter what his nation or creed or color may be, and this Association is one that should be appreciated not only by the people of the United States, but by the people of all the countries of the world.

I thank you very heartily that you have given me an opportunity to say a few words, although I was entirely unprepared, having learned only a few minutes ago that I was to address the Association; and I wish to say that I approve and appreciate the work of this organization and the efficient way in which the officers carry it out. [Applause.]

THE CHAIRMAN: An old book, which some of you may have seen lying about your father's home, although possibly comparatively few of you are familiar with it, contains this phrase: "By their works ye shall know them." Judging the gentleman I am about to introduce by this criterion we should know a great deal about him by what we have seen since we came to St. Louis in the way of works for which he is responsible. We are proud and pleased to have with us this afternoon a man of such distinction, a man who has served in the cabinet of the President of the United States, who has served as governor of a sovereign state, and who has carried to successful completion and now presides over the greatest and most successful Exposition the world has ever seen. [Applause.] I have then the honor and the pleasure of introducing to the International Congress of Military Surgeons the Hon. David R. Francis, President of the Louisiana Purchase Exposition. [Applause.]

THE LOUISIANA PURCHASE EXPOSITION.

BY THE HON. DAVID ROWLAND FRANCIS,

PRESIDENT OF THE LOUISIANA PURCHASE EXPOSITION.

AFTER the flattering and graceful introduction by the presiding officer I feel somewhat embarrassed in appearing before you. Not that I am inexperienced in making speeches of welcome, but there are audiences and audiences, and

without reflecting on other audiences I desire first to pay my respect to the extraordinary degree of intelligence of an audience composed of military surgeons.

The official management feels flattered by your having selected the exposition grounds for the scene of your meeting of 1904. When the invitation was extended to you to hold your meetings on these grounds and you accepted the same, we felt additional encouragement in the work we had before us.

As your chairman has said, we have installed here an exposition which speaks for itself. The local man-



Hon. David Rowland Francis,

agement, it is true, have worked hard for more than half a decade back to inaugurate this exposition. We flatter ourselves that it is entitled to be called a Universal Exposition. But the committee could not have accomplished this work without the assistance and co-operation of other countries and other nations of the world than our own. The Universal Exposition means a great deal when

you take into consideration that in order to be called a universal exposition properly it must have representation from every civilized country on the globe, and it must be participated in by all people. We think we have here a participation of all races, of all creeds and of all nationalities. You may see man in his primitive state, and you may see him in the most advanced stage of civilization.

To interest people of all sections of the world in an exposition to be held in one locality, and that locality up to within a few years comparatively unknown to the civilized countries of the world, has required a great deal of work, and has required years of time and has necessitated a great outlay of money.

This exposition has been in operation now for about five and one-half months. It has been visited by people of intelligence, by people of culture from all parts of this country and from the civilized countries of Europe. It would be unbecoming for me to boast of what is here. We ask of you who are attending this International Congress to give these exhibits a careful inspection. Study them in their relations to each other and pass judgment yourselves upon this exposition. No class of men is better qualified to determine what it means to classify all of the material works of man than is a congress of military surgeons. Expositions are of frequent occurrence, but it is very seldom that there is held in any country an exposition that can justly lay claim to being called universal. When you think what it means to divide all the products of the human race into classes so they will not cross each other, and so that none of the products will be omitted, you may then realize what a task has been accomplished. We have been complimented by other exposition managers, from our own and other countries, by being told that this classification is the only comprehensive and scientific classification that has ever been made, that it has never been surpassed or equalled by the classification of other expositions. We have divided all the products, the material products of mankind into fifteen classes, and those classes are again divided into groups, and all this without crossing each other, that take in all the products of civilization. If you only think for a moment you may

know that it must have been a stupendous task, and when you take that classification and go through the exhibit palaces here and see installed the best that the human mind and the human hand has been able to produce, then you will realize that a universal exposition is a task which a community undertakes but once in a lifetime.

I do not need to call your attention to the palaces that we have prepared for this exposition; they also speak for themselves. There have been other expositions, and great structures were erected in which to place the exhibits of those expositions, but I dare say there has never been another exposition where those buildings in their relation to each other were so harmoniously placed with their surroundings, and in every way so beautiful and so embellished as are those of this exposition.

We do not claim the credit for ourselves, but we mean to lay it where it belongs. The commission found the best talent available, wherever it might be, in the United States. The commission employed ten firms of architects, the best we could find, and each was to devise a general scheme for the buildings, and each department was given to an architect for the purpose of drawing a design of a building, and all those were submitted to a commission of architects and harmonized by changes. Then after being located the question was how they should be connected and how they should be surrounded. For the landscape scheme we are indebted to a Missouri man, a man from Kansas City. You may not have heard of him before, but his name will go sounding down through the ages as a man abreast with the foremost. Look at this landscape scheme and tell me if you have ever seen it surpassed, and if you have you have seen more than any of the guests we have here from any section of the country.

I am not here to boast of this exposition. If we measure it by the standard of pecuniary results it may not be successful. The City of St. Louis furnished \$10,000,000 and the federal government \$5,000,000, and if there is nothing returned they will not be disappointed. [Laughter.] You cannot measure the success of such an undertaking by dollars and cents. It has effects which will continue to be felt for at least a generation to come,

and those effects will not be limited to this section of the country in which this exposition is held. The effects of this exposition will be such as could not have been contemplated by those who make the exposition or by those who visit it. Within three weeks a lady visiting the exposition called at the Belgium building, and in looking at their exhibit of education she was so pleased with it that she immediately sent three of her children to Belgium to be educated, and they are now en route on the ocean to their destination.

There has never been an exposition that devoted so much money, so much time and so much space to education as this exposition. This is the first exposition to dignify the educational progress of the world by devoting one of its large palaces exclusively to the gospel of education. You can see in the palace of Education how much each state expends for education. The per capita cost of education in each state is set forth, and you will see the effect of that in all the states participating in this exposition. The beneficial effects of education were never so impressively presented to the people of the country or to the people of the world as they are at this exposition.

There are various problems that arise in the mind of one who contemplates what can be seen in this universal exposition. We of the United States, living under a republican institution, have been inclined to the opinion, and I do not say that we have changed in this conclusion—we have been inclined to the conviction that our institutions develop the best faculties of the human mind. In a country such as ours we make greater progress in the arts and sciences, because the people themselves are free, because they are their own governors, because their ideal developed all of their faculties, and I think if that test were applied to the exhibits of this exposition we would not change our convictions. At the same time, if you will look at some of the exhibits in those palaces you will see that a great industrial advancement has not been so marked in countries ruled by monarchies, by countries whose governments were absolute monarchies, as has been made by countries living under republican institutions. Of course, it depends not only upon the form of government, but how that form of government is managed.

An exposition of this character presents many problems. A mind impressed with this thought might go back to the cause of this.

But I was not going to philosophize in giving you these few words of welcome. I desire to express the hope on the part of the management that the members of the Congress may prolong their stay to the farthest extent possible. I am sure that so far as you have the time you will make an intelligent observation of these exhibits. There are ways and ways of seeing the exposition. You can go on the intramural railroad, on automobiles, in a rolling chair, and you can see the landscape effects, you can see the exhibits, you can go through the exhibit palaces and say you have seen the exposition. You may go into the Palace of Machinery and say that you have seen the largest engine that has ever been shown at an exposition. One of the greatest curiosities at Philadelphia was the 1000 horse power Corliss engine; at Chicago the largest shown was of 3500 horse power, while the largest here is of 6500 horse power. You may see all these exhibits and then you will have a way of judging them. In all the exhibit palaces you will find lectures are delivered almost every hour of the day. I am sure an intelligent body of men could spend three months inspecting these exhibits, and it is my opinion, and I have before expressed it, that a two months' careful examination of these exhibits is worth more than would be ten months spent in the best educational institution in the land.

One of the great problems of modern times is the education of adults. We send our children to school, but when they leave school they have little time for mental improvement, and if they have the time they do not have the inclination. There are very few men in number who take good books on scientific subjects and give those books careful reading. There are very few after giving them careful reading that have an intelligent comprehension of what they have read. But if those men will go through those palaces and see the best in the line of human endeavor that is there presented they will, in a short time, have a much more intelligent comprehension.

This exposition is not devoted, has not been and will not be

to material purposes alone. We have had an International Congress of Arts and Sciences. It was the first of the kind ever attempted. There have been congresses in connection with other expositions. During the exposition at Chicago there was a Congress of Religion participated in by almost every country that had religious convictions and fads, and such congresses have been interesting, but there never was a systematic effort made as has been made in this Congress of Arts and Sciences held here. It was participated in by several hundred savants of the world. The proceedings of that congress will be published in book form, and it will mark an epoch in the intellectual progress of the world.

I am not going to detain you longer. Suffice it to say that the management feels honored by the complimentary expressions we have heard from men of intelligence and observation. We feel that we have to the extent of our ability complied with all of the promises made to the world when this exposition was first planned. We feel that its effects will be long felt throughout this country, and that they will also be felt to a degree in the foreign countries participating.

We shall treasure as one of the pleasantest recollections in connection with this exposition your international meeting of military surgeons. We appreciate the position which you gentlemen occupy in your profession. We place a very high estimate upon the value, upon the benefit of your profession to the human race, and if, in your experience here, not only in your deliberations, but in that which you see and hear in connection with this exposition, you shall have felt benefited to any degree, so that hereafter you may not only pursue the work of your profession more effectually, but that you may pursue it with greater satisfaction to yourselves, we shall be more than pleased.

I thank you for your attention and again express the hope that your stay with us may be pleasant and profitable. [Prolonged applause.]

THE CHAIRMAN: It is not necessary, in this audience, at least to mention the name of the gentleman whom I am about to introduce, but nevertheless, I have the honor of presenting to you Medical Director John Cropper Wise, U.S. Navy, president of this Association, who will now deliver the president's annual address. [Applause.]

The President's Annual Address.

THE IDEAL MILITARY SURGEON.

By JOHN C. WISE, M.D.,

MEDICAL DIRECTOR IN THE UNITED STATES NAVY.

IF we were to test the civilization of a nation by the number of eminent men it has produced, very high in such a list would we place the republic of France.



Medical Director John C. Wise.

To call the roll of those of her children who have advanced the sciences and adorned the arts, would be but to review the history of these subjects, while in the theater of war, she has produced the Master Spirit; though born an Italian, he was in his instincts, training, and aspirations essentially French.

A further and singular distinction of this gifted nation, was that while her great military genius astounded the world with the brilliancy of his strat-

egy and grand tactics, carrying the disaster of war alike to the palace and the hovel, she contemporaneously produced a man, who above all others, before or since, labored most abundantly

to bring to the armies of his distressed country the blessing of a completely organized, and efficient "corps de santé."

Even though surrounded by the attractions and allurements, of a great historic exposition; though we have valuable papers, and able reports, to claim our attention; not for a moment will I regret, and I trust you may not, the time I shall take to picture to you, however imperfectly, the splendid personality of Baron Larrey, the greatest of Military Surgeons.

At the very outset, I quote you as an introduction to the man the following noble words, written in his latter days. "Regarding the esteem and the consideration of the public, as the most flattering recompense for the man of sensibility, and the most worthy of his ambition; happy if I have been able to merit it, by my zeal in the fulfillment of my duties, and by the efforts I have incessantly made to contribute to the progress of a science, to which my life has been consecrated; especially happy if I can be useful to my country, by presenting to it the results of my labors and observations, and thirty years honorable service." Most of you are familiar with the character, but I ask to recall his services to stimulate ours, to cite his career for our instruction, above all to speak of his preeminent abilities and nobility of character, as an example for all humanity and to the imperishable honor of Military Medicine and Surgery.

Larrey was born in 1766, in the village of Campan, Hautes-Pyrenees.

After receiving an academic education, including the study of philosophy, and the ancient languages, he became a student in the office of his uncle, a surgeon located at Toulouse. Later we find him in Paris competing for a position in the Naval service.

We have so complete a history of Larrey in his "Memoirs"* (which alone is a noble monument) that the motive of every act can be traced. General, the Baron Ambert, in his biography,† has pictured this great surgeon as no other could: his is not the review of his confrere, but of an officer of the line whose senti-

**Memoirs de Chirurgie Militaire et Campagnes.* 4 Vol. 8vo. Paris, 1812-17.

†*Le Baron Larrey.* Par le General Joachim Ambert.

ments were inspired by the noble life of unselfish devotion enacted before him daily.

Larrey tells us of his first visit to Paris, thus: "I arrived at the metropolis in 1789, a few days after the celebrated Louis, Perpetual Secretary of the Academy, had announced that a public examination would be held for a certain number of auxiliary surgeons for the Navy, for the department of Brest. This proposition was so consonant with my disposition for travelling, that although I might be obliged to abandon my original design, I did not hesitate to become a candidate, and had the good fortune to obtain one of the proposed appointments." Larrey was then in his twenty-first year. He was attached to the "Vigilante," which wintered in port, and in this period we have the key-note of the subject of our sketch. He did not succumb to the allurements of social life and dissipation, but we find him rather visiting the prisons of the galley-slaves, the arsenals, the magazines and ship-yards, and as he says, "turned my attention to everything that related to navigation and the duties that would devolve upon me on ship-board." This commencement characterized the man's entire career, doing thoroughly both practically and scientifically all work that presented and justifying Ambert's application to him of the motto "*Fais ce que dois advienne que pourra.*" On his return from his first cruise to France, he was a man of reputation and was ordered to Paris, where he continued to study at the Hotel Dieu and the Invalides, being especially attracted to work in ambulance organization, then being perfected by the celebrated Desault.

In 1792, having been transferred to the Army for ambulance work, we find him first in the field with the Army of the Rhine. Here his career really commences and from now on, until the star of Napoleon waned, he was almost continually in the field. It was during this campaign that Larrey conceived and put into execution his ambulance organization, which was so successful as to become the model of all Europe. This service was composed of several divisions, in such manner, that one division represented the entire system and could be multiplied in accordance with the needs of an army.

In speaking of Larrey's plan, General Ambert writes: "It was not only a surgical system that Larrey had invented, it was a veritable military organization, which lent itself to strategic combinations, as well as to administrative exigencies. He had combined the sanitary service in such manner as to place it in relation with the admirable divisional order of our armies. Larrey multiplied his units, without modifying their composition. A few hours thus sufficed to assure that important branch of the service; on the other hand, the division sub-divided into brigades, or demi-brigades for secondary operations." While engaged in this important field-work Larrey found time to investigate the phenomena of galvanism, and to send an able and valuable report to the French Academy on gunshot wounds.

He was promoted and won from Beauharnais the highest encomiums on the results of his work, and the statement that his "indefatigable labors in the care of the wounded had contributed to the cause of humanity and the country."

On returning to Paris, he is directed to organize the ambulance system for all the armies of the Republic, and on the completion of this service, he is ordered to the school of Military Medicine at Val de Grâce as Professor of Surgery. In 1795 he served with the Army of Italy. Napoleon on seeing the splendid work of his "ambulances volantes," thus addressed the famous surgeon: "Your work is one of the happiest conceptions of our country."

In May 1798 Larrey embarked as Surgeon-in-chief of the Expedition to Egypt.

The services of this officer, in this most celebrated campaign, is a complete history of the duties of the military surgeon. To give in detail the story of Larrey's work in Egypt and Syria, would be but to write the history of those campaigns, he was in every battle, in defeat as well as victory. At all times we figure him as the genius of mercy with outspread wings and sheltering arms, carrying succor and surcease of sorrows wherever he went. Today he is experimenting to find the causes and an efficient therapeusis, for all-prevailing ophthalmia, tomorrow with other "Officiers de Santé," defending the Military Hospital at Cairo from attack,

and let those who call medical officers "non-combatants," note that on this occasion, two of Larrey's staff, Roussel and Mangin, fell mortally injured at his side, in defense of the wounded,—but we read "the sick were saved." In Syria, Larrey literally lived among the sick and wounded, establishing at every convenient point well organized hospitals, he sent to them with miraculously swift transport, those incapacitated for duty at the front. It is in this respect that Larrey probably evinced his greatest genius as a Military Surgeon,—he conceived correctly the requirements of the situation from the sanitary stand-point, and his intelligence and success in fulfilling these conditions for the best disposition of the sick and wounded on the field of battle, are unequaled; yet while discharging administrative duties on this grand scale, he performed daily hundreds of capital operations, thus realizing our highest conception of administrative and professional talent.

The Army of Bonaparte was attacked in Syria by the plague, and when we reflect on the status of our knowledge of the disease in this enlightened age, we can but reflect how much worse were the conditions in Larrey's time. He fought the pest heroically, as we would expect of him, and with every means known to the science of his day, but to see eight of every ten cases die; yet undaunted he relaxed not in his ministration. Of thirteen hundred wounded embarked from Egypt for France, we are told there were but eight deaths; with unrelaxing care, and attention to ordinary methods of cleanliness, Larrey obtained as good results on this occasion, as we now have, with antiseptics.

Just as we find Larrey in Egypt, so he is elsewhere; we note the same unalterable devotion to duty, the same great humanity and supreme pity, the same self-command, the most intense love for scientific observation; combined with these qualities, he possessed an exalted courage in disaster, a spirit so high, a resourcefulness so inexhaustible, as to command not alone the respect, but the reverence of the Army, as well as that of all Europe.

Returning to France, Napoleon made his great surgeon Chief Medical Officer of the Guard, and pinning upon his breast the insignia of the Legion of Honor, the First Consul said to him: "C'est une recompense bien meritée."

Is it not a worthy tribute to the brotherhood of our noble calling, that after Napoleon's army entered Berlin, Larrey was made a Doctor of Medicine of the University of Jena? Thus his enemies rewarded him.

After the arduous campaign of 1808 in Spain, Larrey's health failed; no physique could elaborate the resources he required of it. He contracted typhoid in treating an epidemic of this disease among English prisoners.

After a leave spent in Paris, thanks to his vigorous constitution, he is soon well again and able to rejoin the Emperor before Vienna in 1809; here as at Berlin, he is crowned with highest honors and delivers a course of lectures on Military Surgery. He had practiced surgery on every battlefield and so he taught this science in every conquered capital, receiving no guerdon but the unanimous applause of a civilized world.

His work in reorganizing the hospitals in Vienna was enormous; one day while thus engaged a parchment was placed in his hands. Napoleon named him a Baron of the Empire, with an annuity of 5,000 francs.

To us gentlemen this was his most inconsiderable monument.

In 1812 Larrey was named Surgeon-in-Chief of the Grand Army, Desgenettes, his old friend in Egypt was *Medecin-en-Chef*, and together they labored to make preparation for this most formidable armada; to-day we cannot conceive of it, for being one of the most immense mobilizations of modern times, it was at a date prior to steam transportation, anaesthesia and antisepsis; but Larrey had set about a task as impossible as that of Napoleon. At the outset, ambulances were in insufficient number for the care the wounded.

The Surgeon-in-Chief sacrificed his own conveyance to no purpose. At Smolensk the most ordinary surgical supplies were wanting and Larrey left here 10,000 wounded, and all his reserve staff: flaming villages, and death dealing cold was all prevailing, —no medicine, nor dressing, no food or transport! Such was the situation of the French army, even before the battle of Moscow, September 7th, 1812. Larrey's great soul viewed with intense calm and profound sorrow the inevitable outcome of such a situation.

At the end of this September day, there lay upon the field, of the French, forty general officers and twenty-nine thousand men, killed and wounded, while on the Russian side the loss amounted to sixty thousand!! Such slaughter is almost incredible.

The devotion of the French medical staff, which labored day and night, amidst great privations, on friend and foe alike stands to-day as a most sublime tribute to our profession.

The historian of the Empire, M. Thiers, quotes Larrey as the most reliable authority at the capture of Moscow to the effect that the Army could have existed six months on the provisions captured there.

Such a spirit as Larrey's could not be crushed in the despair of this famous retreat.

General Ambert tells us "the ambulances marched in the centre of the column, surrounded by surgeons who, sustained by the attitude of Baron Larrey, lavished their care on the sick and wounded. On all sides they called on Larrey: who marched in front carrying succor and encouragement wherever he went, placing his gourd to the lips of the dying and dividing his crust with those left behind. No circumstance shows the indomitable courage of the man better than temperature observations, taken with an instrument carried attached to the lapel of his coat; such was a spirit which animated Ambler, writing his journal with freezing fingers in the Arctic.

At the passage of the Beresina with fifty thousand souls crowding two small and insecure bridges, their rear galled by the Russian fire, Larrey's life was saved by the soldiers, who taking him in their arms passed him from one detachment to another.

After the battles of Lutzen and Bautzen it was reported to Napoleon that many conscripts mutilated themselves in order to escape further military service; the mutilations consisted of wounds of the hand, or a loss of fingers, making it impossible to handle arms. The Emperor's indignation was beyond all bounds; he considered the honor not only of the army, but the nation at stake. Larrey, who had examined many of the wounds, declared that they were not voluntary. Napoleon then ordered an official inquiry in each case, and so important did he consider a

correct solution, that the Court was composed of officers of the highest rank.

Larrey's plan was to inquire minutely into the circumstances of each case, the character of the injury, and how it was received, as would be done in any medico-legal procedure,—thus making the task long and laborious. It was established, that most of the wounded were young conscripts unfamiliar with arms, who were invariably from the front rank, being shot by those in the rear; others it was shown had been wounded when scaling hills and holding their pieces in front of them.

Thus Larrey was looked upon as the conservator, not only of the lives of his comrades, but also of their honor. He was as well known among the men as the Emperor himself, and was always welcomed with him.

The great drama in which these two remarkable men, Napoleon and Larrey, had so long and brilliantly acted drew near to its close. Larrey, as we would suppose, wished to follow the Emperor to Elba, but he was denied this last and extreme test of fidelity, his sovereign telling him, "you belong to the Army, you must follow it." Yet they met again on the fateful field of Waterloo, where Larrey's ambulances were dispersed by a charge of cavalry.

As we would expect of a nation, whose civilization was so much in advance of all Europe, the humane side of war was early recognized in France, yet the efforts at relief of the wounded were seldom, if ever, extended to the enemy, and indeed, a "service de santé" in its full meaning, and import can be said to have originated in the Army of the Rhine, under Beauharnais, being conceived and consummated by Baron Larrey. The service for surgical assistance had hitherto been rather an annex to the military family of some great commander; thus Vesalius, served with Charles V, and Ambroise Paré, was attached to the camp of Vendome. If we speak of Military Surgery in its truer sense,—that rendered on the field of battle, and in military hospitals involving also the collection and transport of the wounded—we do not hesitate to name Larrey as its creator. If any doubt the truth of this assertion, let them compare Paré at the siege of Metz,

under the Duc de Guise, with Larrey at Vienna with Napoleon. At Metz there were neither hospitals nor surgeons, and the military authorities cared so little for the wounded that as the current phrase put it, "the bed of honor of the wounded is a good ditch." The "service de santé" of Larrey comprised not only all that is fully comprehended in the words today, but it had at its head a man so greatly gifted with administrative capacity and practical surgical qualifications combined, that it can be truly said, no age before or since has produced his equal. As Ambert says of him, "Larrey was a complete Army Surgeon, he was the first of his race. Until his day the grandeur and importance of the surgery of armies had been ignored. Not only did he organize the service, but he elevated it to the height, that Napoleon elevated the edifice of his military power. He had the intrepidity of the trained Captain, the secure probity of the honest administrator, the ardor and activity of the simple soldier, and the humanity of a father, besides a goodness and simplicity that made him beloved by all, and a virtue which commanded universal respect. Ambition was a stranger to him; he disdained fortune, and lived in the midst of the Grand Army as a man apart. He was also General in Chief; he had his army, that he commanded and manoeuvred. At the sight of the enemy Larrey made his dispositions; his "avant garde" penetrated afar to find the wounded; his line of ambulances is a battle corps with attending reserves.

"This army which conserves is made in the image of that which destroys. He places an ambulance here and dispenses one there, according to the new position taken by the combatants. He measures the development of the battle, considers in turn the artillery, the accident of the field, the depth of the columns and collects the dead and wounded. He takes no account of rank or nationality, but has for all words of encouragement, and is sufficiently master of himself, to preserve even under the mitrailleuse, sweetness, benevolence, and charity. Never did Larrey neglect to plough the field abandoned by the enemy and, collecting the wounded as brothers, prove to them that, if France 'is great in her courage, she is also great in her humanity.'"

Such is the man I would present to you as the highest ideal

for us to follow, such in his absolute human completeness, is the surgeon, the soldier, and the gentleman.

In the contemplation of a career such as this, we must admire it as a whole. It is not his devoted efforts to succor the plague-stricken in the deserts of Syria; it is not the majestic nobility of his example or his heroic self-sacrifice amid the rigors of an arctic winter in Russia; it is not his loyalty which saved the honor of the army at Bautzen; it is not the administrative capacity, which organized the first "service de santé" in the field, as well as the hospitals of fallen capitals, before whose walls, he had a few hours before performed hundreds of capital operations; nor is it for his fidelity at the last,—but it is rather for all of these things, combined with a nature so gentle, a humanity so unfathomable, that makes the character of the splendid Larrey, and marks him as one—

"Cast in the majestic mould
Of those high-statured ages old."

As worldly rewards go, this man was requited. Every court and academy in Europe vied to do him honor, but he loved best, we are assured, the mute yet eloquent look which told of pain relieved and suffering assuaged.

At Val de Grâce, the French school of military medicine where he lectured, they have placed a monument to his character and services; his name has been written high upon the arc de triomphe de l'étoile, yet those who most love and revere his life and example, will find his fitting memorial in the shaded walks of Père la Chaise, where on the stone which marks his resting-place are the words, taken from the will written at Saint Helena:

"The most virtuous man I have ever known."

Original Memoirs.

OUTLINE OF THE ORGANIZATION OF THE DEPARTMENT OF HEALTH OF THE ISTHMIAN CANAL COMMISSION, ISTHMUS OF PANAMA.*

By JOHN W. ROSS, M.D.

MEDICAL DIRECTOR IN THE UNITED STATES NAVY; DIRECTOR OF HOSPITALS AND ACTING CHIEF SANITARY OFFICER.

THE State of Panama seceded from the United States of Colombia, November 3, 1903, and was recognized as an independent nation—the Republic of Panama—by the United States of America on November 6, 1903.

Ratifications of the treaty providing for the construction of a Trans-Isthmian Panama Canal were exchanged between the governments of the United States of America and of the Republic of Panama, on the 26th of February, 1904, at Washington, D.C. Said Treaty was proclaimed on the same day.

Under this treaty the Republic of Panama ceded to the United States of America, in perpetuity, a strip of territory, known as the Canal Zone, ten miles wide—five miles on either side of the Canal—and extending from the Atlantic to the Pacific Ocean.

The members of the Isthmian Canal Commission,—Rear Admiral John G. Walker, U.S. Navy, Chairman; Major General George W. Davis, U.S. Army; William Barclay Parsons, C.E.; William H. Burr, C.E.; Benjamin M. Harrod, C.E.; C. Ewald Grunsky, C.E.; and Mr. Frank J. Hecker,—were appointed by President Roosevelt in March, 1904.

The ownership of the Panama Canal property and of the Canal was transferred by the New French Canal Company to the Isthmian Canal Commission, May 4, 1904.

*Up to September 26, 1904.

Major General George W. Davis was, by the President, appointed Governor of the Canal Zone, May 9th, and took command thereof May 17, 1904.

The Isthmian Canal Commission sailed for Panama March 29th and arrived at Colon April 5, 1904. They took with them as sanitary advisers: William C. Gorgas, Colonel and Assistant Surgeon General, U.S. Army; John W. Ross, Medical Director, U.S. Navy; and Louis A. LaGarde Major and Surgeon, U.S. Army.

This party remained upon the Isthmus about two weeks, during which time they visited the most important points (some of them repeatedly) on the Canal Zone; the cities of Panama and Colon, as well as the Island of Taboga, nine miles down the Bay from Panama. During this time the sanitarians made a careful survey and study of the existing and prospective sanitary conditions and requirements. On the way back to New York they made out and submitted to the Commission a report, setting forth their views and recommendations for the organization and equipment of a health department competent to meet all the sanitary difficulties which could present themselves during the construction of the Canal, even when operations would be at their maximum.

After the return of the party to the United States, the Isthmian Canal Commission appointed Colonel Gorgas as Chief Sanitary Officer; Dr. Ross as Director of Hospitals; Surgeon H. R. Carter, P.H. & M.H.S., as Chief Quarantine Officer; Major La Garde as Superintendent of Ancon Hospital; and Mr. Joseph A. LePrince as Chief Sanitary Inspector. These officers then selected their principal assistants, proceeded to the Isthmus and began their work.

During the month of August, Commissioner Grunsky called together in frequent conferences the above mentioned officers, together with the Superintendent of Colon Hospital and the Supervising Architect; and, with them prepared a plan of organization of a Department of Health to meet the needs of the first year of service and the conditions prevailing during the time of preparation for canal work on a large scale. This plan of organization was approved by the Commission, and went into effect on

the 3rd of September, 1904. What follows in this paper is taken largely from said plan of organization.

According to this scheme, the Department of Health, with jurisdiction extending beyond the limits of the Canal Zone, is a branch of the Government of the Canal Zone and is considered an administrative department of the Canal Zone Government. The affairs of the Department are administered by a Board of Health, composed of four members, namely; the Chief Sanitary Officer, the Director of Hospitals, the Chief Quarantine Officer and the Chief Sanitary Inspector of the Canal Zone.

The Chief Sanitary Officer is the executive head of the department, empowered to direct its operations, enforce sanitary regulations, and report to the Governor relative to the operations of the Department.

The Department of Health is divided as follows: a sub-department of hospitals, under the Director of Hospitals, embracing the hospital at Ancon, the hospital at Colon, and emergency hospitals and dispensaries along the line of the Canal; a Maritime Quarantine Service; a Sanitary Service for the Canal Zone; a Panama Health Office, and a Colon Health Office.

HOSPITALS.

Ancon Hospital: This institution, situated at the Panama end of the Canal Zone has about 160 patients and a capacity of about 500 beds. All buildings need more or less repair, and screens are to be provided for the wards and balconies, in order to reduce to a minimum the opportunity of the malaria and yellow fever-carrying mosquitoes to reach the patients.

A number of new buildings are to be constructed, which, with the old buildings, will be provided with modern appointments such as electric lights, telephones, etc. There are two chapels, one for Protestants and one for Catholics.

A training school for nurses will be established at Ancon Hospital, the number of Student Nurses being limited to 30 first-year students, and to a total of 75. They will receive \$12 a month during the first year, \$15 a month the second year, and \$18 a month the third year. No one will be admitted to the train-

ing school who has not the necessary educational attainments according to a standard prescribed by the Director of Hospitals. The student nurses will receive travelling expenses to the Isthmus of Panama from New York, New Orleans or San Francisco; also return expenses to one of these cities in case of service for at least one year, or in case of disability by reason of sickness.

When these Institutions were taken over by the Isthmian Canal Commission there were in Ancon Hospital, the Stranger's Hospital and Colon Hospital, 22 Sisters of the Order of St. Vincent de Paul (Sisters of Charity). Such of these Sisters as desired to remain on the Isthmus were invited to continue in service, all to be placed at Ancon Hospital. The Director of Hospitals is authorized to enter into an arrangement under which not to exceed \$100 per annum is paid for the services of each Sister.

The Superintendent of Ancon Hospital is Major Louis A. La Garde, U.S. Army.

Colon Hospital: This hospital has a capacity of 100 beds, expandible to 300 beds. It is formed by the coalescence of two institutions; one, formerly the French Canal Company's hospital, and the other the hospital of the Panama Railroad Company. Both are situated over the water, supported by masonry piers on the coral reef forming the water front strip of Manzanillo Island, on which island Colon is situated. Between these two structures there is room—some 250 feet—for another ward building also over the water on the coral reef. This new building is to be erected at once. It will have a capacity of about 150 beds. The hospital grounds will be enlarged and made to include practically all that part of Colon on the northerly portion of Manzanillo Island.

The Superintendent of Colon Hospital is Surgeon L. W. Spratling, U.S. Navy.

Hospitals along the Line of the Canal: Emergency hospitals will be required along the line of the Canal where large numbers of men are concentrated, as the work progresses. The Chief Sanitary Officer estimates that twenty of these hospitals will ultimately be needed, but necessity exists at present for only three. Two of these, eight beds each, have been started, one at Culebra and one at Gorgona, suitable buildings having been secured at those

places. The third is in process of establishment at Bohio. The personnel of each hospital will be one Physician, one Nurse, two Ward Attendants, two Orderlies and one cook. Each hospital will be thoroughly equipped and will have combined with it a dispensary.

The physicians of these hospitals are: for Culebra, P. A. Surgeon H. A. Stansfield, U.S.P.H.&M.H. Service; for Gorgona, Dr. William Fawcett Smith; and for Bohio, Dr. T. B. Wingo.

Two additional dispensaries will at once be established at points along the line where the employes of the Canal are out of reach of the Hospitals. The physicians selected for these dispensaries are Drs. J. P. Bates and H. T. Summerhill.

Very thorough and valuable dispensary and sanitary work is being done for the Health Department of the Isthmian Canal Commission, on the line, at Empire and the adjacent stations of Bas Obispo and Las Cascadas, by Surgeon William H. Bell, U. S. Navy, the Medical Officer of the U. S. Marine Battalion stationed at Empire. In this he is ably seconded by Assistant Surgeon James Miller, U. S. Navy. Empire and Bas Obispo are important stations with a considerable personnel, and the services these officers are cheerfully rendering us gratis would otherwise require all the time of at least one salaried medical officer of the Commission, whom we are now able to utilize elsewhere.

Santo Tomas—the City Hospital of Panama: This is managed by a Board of five Directors and contains about 150 patients. It is badly constructed, little or no attention being paid to modern hygienic requirements, wretchedly administered, and with entirely inadequate medical attendance and nursing. Steps are being taken to remedy these defects. Lieut. Theo. C. Lyster, U.S.A., Executive Officer of the Sanitary Department, is to be appointed Superintendent; and the Supervising Architect is making plans for the reconstruction of the buildings, installation of the proper plumbing, etc.

Strangers' Hospital, Ancon: This institution, conducted for the last quarter century, by the "Comision de Beneficencia" of Panama, for the benefit of foreigners, seamen, etc., has been very recently absorbed by Ancon Hospital.

Leper Colony, "Lazaretto:" This is situated on the water front, in the outskirts of Panama; and consists of a few shacks, incapable of protecting its seven to nine inmates from the torrential rains. The lepers receive no medical attendance or nursing whatever, and get only about half enough to eat. The Government of Panama has money enough appropriated to make these lepers comfortable, but it has not been the especial business of any one to look out for them. The Governor of the Canal Zone, the Chief Sanitary Officer, and the Director of Hospitals have taken this matter up with the President of the Republic, and with other officials of Panama, who now manifest considerable interest in the matter. The probabilities are that, within a short time, a suitable and permanent institution will be established for the care and comfort of the lepers.

The Insane: The insane of Panama have heretofore been kept in the city prison. Since the establishment of the Government of the Canal Zone, the lunatics who have presented themselves, have been cared for in a temporary arrangement, in buildings within the grounds of Ancon Hospital. Preparations are being made for the construction of a building sufficiently large for the accommodation of the insane of both the Canal Zone and the Republic of Panama.

Internes: In the organization of the medical staff, provision is made for internes. It is believed that here as in the hospitals of the United States, the graduates of medical colleges will find suitable material for post-graduate work. Those who are selected will receive free transportation from New York, New Orleans or San Francisco to the Canal Zone, \$50.00 a month while in service here, and free transportation back to one of these cities after a years' service, or in case of disability from illness. At present, only fourteen internes, eight for Ancon Hospital and six for Colon Hospital will be appointed. Should an interne be assigned to duty in some other capacity, after a service of not less than one year, he will receive not less than \$125 a month.

Trained Nurses: In the personnel of the Department of Hospitals provision is made for 42 trained women nurses at Ancon Hospital, 14 at Colon Hospital, and one at each of the

hospitals along the line. At present we have only about 20 on the Isthmus. Our nurses receive \$50 a month, with board, lodging and washing, and are entitled to six weeks leave of absence during each year of service. Transportation is furnished them from New York to the Isthmus.

Ward Maids: Ward Maids, being such young women as desire to gain experience as nurses but who are not sufficiently well educated to entitle them ultimately to certificates as trained nurses, will be accepted into the service of the Hospital. Their compensation will not exceed \$12 a month during the first year of service, \$15 a month during the second year of service, \$18 a month during the third year; thereafter \$20 a month.

SANITARY SERVICE OF THE CANAL ZONE.

No work being done by the sanitary force upon the Isthmus is of greater importance than that which, by breaking up the breeding hiding places of anopheles and stegomyia mosquitoes, will reduce the danger of malarial and yellow-fever infection. This work is now in charge of a Chief Sanitary Inspector, under whom there are eight assistant inspectors. The work done by these inspectors is not confined to inspection, but includes actual direction and supervision of work for the extermination of mosquitoes and a general cleaning of premises and places, and the disposal of night-soil and waste.

Chief Sanitary Inspector Joseph A Le Prince, is in charge of the Sanitary Service of the Canal Zone.

Panama Health Office: At the head of the Panama Health Office there is a physician who will act under the direction of the Board of Health and be in direct charge of the health and sanitary work in that city. The Health Officer of Panama is given all powers necessary to enforce sanitary regulations in the city of Panama. This is of vital importance to the success of the attempt that is being made by the Sanitary Department to decrease the occurrence of malarial and yellow fever in the Canal Zone and the two adjacent cities. The Health Officer, in addition to the ordinary duties, provided it becomes necessary to exercise the same, devolving upon a Health Officer, such as examining cases of suspected contagious diseases, vaccinating school children and

the poor, guarding the water supply, abating nuisances and the like, has authority to clean premises at the expense of the property owner, to clean out drains and gutters, to enforce sanitary regulations, and even to clean and sweep the public streets if occasion should arise.

Dr. Lewis Balch is the health officer of Panama.

Colon Health Office: What has been said with reference to Panama Health Office applies with equal force to Colon. The Health Officer there, when in need of consultation, can call upon the Board of Health.

Surgeon L. W. Spratling, U.S. Navy, is the Health Officer of Colon.

All persons coming to the Isthmus in the employ of this Commission are required to bring with them, health certificates from reputable physicians, certifying that they are sound and in a suitable physical condition for life on the Isthmus. Salaried employes hereafter taken into the employ of the Commission on the Isthmus will not be entitled to free medical treatment, unless they are physically sound and in good health at the time of their employment.

Convalescent Station, Taboga Island: There is a large structure of two stories on Taboga Island, built by the French as a sanitarium and used by them as such—usually referred to as the Convalescent Hospital. It is capable of accommodating about 150 convalescents. An expenditure of \$6500 has been authorized by the Commission to put the building in a suitable condition of repair, after which it may, when required, be used for the purpose indicated. This station will doubtless be a valuable adjunct to the Hospital establishment of the Isthmian Canal Commission.

Taboga Island lies in Panama Bay, nine miles due south of the city. It is four miles long and two broad, covered entirely by small hills, the highest of which has an elevation of 935 feet.

It contains a village which has a population of about 600 people, mostly engaged in agriculture and fishing.

Owing to the topography of the island no standing water exists, although there are many small streams and springs in the hills. The steamship companies of Panama secure from Taboga

all the water supplied to vessels entering this port. Large tanks have been erected on the island and the supply is copious. The drinking water contains considerable quantities of iron, and has an isthmian reputation for wholesomeness.

The rainfall is less than at Panama and, owing to its location there is always a breeze blowing over the island. The almost total absence of mosquitoes, the pure air, the abundance of pure tonic drinking water, and the comparatively dry and invigorating atmosphere, have made Taboga for years the health resort of the Isthmus generally, and the City of Panama especially. Many persons have their summer residences there, and all those who can do so go there to recuperate after the debilitating fevers of the tropics.

PERSONNEL OF THE MEDICAL DÉPARTMENT OF THE CANAL ZONE.

IT has recently been officially announced from the office of the Isthmian Canal Commission that the following medical officers have been assigned to duty in the Canal Zone to the functions indicated and with the compensation mentioned in each instance: Colonel William C. Gorgas, U.S. Army, chief sanitary officer, \$7,500; Medical Director John W. Ross, U.S. Navy, director of hospitals, \$7,000; Major Louis A. LaGarde, U.S. Army, superintendent of canal hospital, \$6,000; Dr. Henry R. Carter, P.H.&M.H.S., chief quarantine officer, \$5,750; Surgeon L. W. Spratling, U.S. Navy, in charge of sanitary work, \$5,250; Dr. A. B. Herrick, pathologist and clinician, \$4,000; Captain A. N. Stark, U.S. Army, physician, \$3,600; Dr. H. A. Stansfield, P.H.&M.H.S., in charge of laboratory, Panama, \$3,000. Mr. J. A. Le Priece, sanitary officer, \$3,000; Lieut. Theodore C. Lyster, U.S. Army, executive officer, \$2,400; Dr. Lewis Balch, health officer, \$3,000; Dr. E. S. Wheeler, assistant physician, \$2,400; Dr. W. F. Smith, assistant physician, \$2,400; Dr. T. B. Wingo, assistant physician, \$2,400; Dr. D. Lacroisade, assistant physician, \$2,400; Dr. Lloyd Nolan, assistant physician, \$1,500. Drs. J. C. Perry, C. C. Pierce and F. W. Ames have also been appointed members of the medical staff, but their salaries have not been determined; they are officers of the government services, and have been ordered to report to the governor in Panama.

Contemporary Comment.

THE IMPERIAL MILITARY MEDICAL SCHOOL AT ST. PETERSBURG.



**Dr. Roman de Wreden, Privat-
Docent in the Russian Imperial
Military Medical Academy.**

AT the last meeting of the Association of Military Surgeons Dr. Wreden of the Russian Army gave an interesting account of some features of the work of the Imperial Military Medical School at St. Petersburg. M. Marcou in a recent number of the *Archives Générales de Médecine* gives a rather more detailed description of the institution. It is the only school of the kind in Russia and takes the place in the University of St. Petersburg which would have been occupied by a general Medical Department.

It is an ancient institution, having celebrated its centennial in 1898. It is the oldest medical school in Russia, and its history is connected with the first rational efforts at instruction in the empire. Peter the Great was the first to found a school of medicine. He built several hospitals, but there were no physicians to manage them. In 1798 the Emperor Paul signed a decree ordering the construction of the Medico-Surgical Academy. Gradually it rose to its present position. The German influence in the field of medicine has been very strong, but even at the time when French culture dominated all the departments of intellectual activity in Russia, its influence in medicine was *nil*. In the olden times it was the seminaries of priests,

especially, which furnished the medical students, for the medical career could scarcely be called brilliant. But gradually, the situation has been improving, and a larger number of young men have turned their attention to medicine. Even now the Russian military physician is more poorly paid than any other officer of corresponding grade. Only the Russian Christians or Mahometans are admitted to the school; Israelites are refused. The number of students is limited to about 750. That is a small number for a large capital. But there is also the Institute for Women Physicians, with 1,200 students. The cost of the course for a year is sixty roubles, or \$32. The course extends over a period of five years, and, after finishing it, the student is at liberty to practice anywhere in the vast empire. The students enter the school at about eighteen years of age. They wear a uniform, and carry a saber, and are officially under military discipline. The students and professors, in reality, form part of the army.

For each course there is a commanding colonel. He inspects the students, signs their passports and all sorts of papers, and, in case of any disturbance, he judges the culprits. But, in spite of appearances, no trace of military spirit exists in the school. In general, the students appear to be very quiet, and hard workers. At the end of five years there is a comprehensive and long examination, consisting of twenty-eight parts, which alone gives the right to practice. About 150 students are given the title of physician, with "satisfactory" or "extremely satisfactory." From this number about seventy can be presented as candidates for the Institution of Improvement. A thesis, usually on general pathology, is presented by each candidate, without any signature. These theses are compared, and the ten most desirable are designated, and the authors are "Physicians of the Institution of Improvement." These young physicians are connected with the school for three years. The first seven are paid \$53 a month. The other three are not paid, but have the same privileges. They choose a specialty, and study with a professor for the three years. They pass examinations during this time to obtain the title of Doctor of Medicine, which is of more value than the first title of Physician which they have received. Every year several of the young physicians are sent to a foreign country to study in the line of the specialty which they have chosen.

After a period of two years of foreign study, the student is eligible to the examination leading to the title of Privat-Docent. Thus the student will have spent, at the end of this time, ten years in study—five in the academy, three with a Russian professor and two abroad. The professor is at liberty to choose his own assistant. As to the election of professors, when a chair is vacant, the fact is published, and every physician in Russia is at liberty to present himself as a candidate. Generally they are chosen from the old assistants, or from the provincial professors. The professor is calm in his manners, and speaks without gesticulating. Original work is especially encouraged among the members of the faculty, the institution appropriating annually a sum of about \$800.00 for distribution among the professors of the institution who, during the year, have produced textbooks on subjects connected with their special department of medical science. This year the money was divided between Professor Bechtereff, for a book on the functions of the brain, and Professor Kravkoff, for a manual of pharmacology.

The scholastic year lasts from the 16th of September to the 1st of May. The first two years are devoted to the preparatory course. The last three years to the special medical courses. The theoretical work lasts from nine o'clock in the morning to two o'clock in the afternoon. Laboratory work is very comprehensive and carried out on a large scale. To this the afternoon and evening hours, especially are given up. The Minister of War is very generous, and large sums are devoted to the maintenance of the laboratories. The instruction of the hospitals amounts to very little, and a vast amount of material is wasted. At the end of the first year, if the examinations are not satisfactory, the student is dismissed from the school. The examinations of the other years are less severe.

This medical school at St. Petersburg supports a complete corps of medical instructors, which compares favorably with the faculties of the large capitals of the West. The writer believes that the theoretical instruction and laboratory advantages are more comprehensive than the same work in Paris. On the other hand, the hospital work in Paris is superior, for the students can work in all the hospitals of the city. Finally, everything is ruled methodically here, and the student is not left to himself as he is in other countries.

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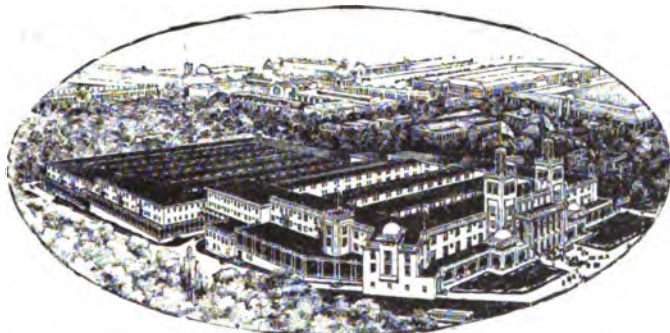
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Editorial Expression.

FEATURES OF THE ST. LOUIS MEETING.

THE meeting in St. Louis was characterized by two conspicuous features,—the absence of special entertainment upon the part of the people of the city and the prominence in the meetings of the foreign delegates. These factors were naturally due to the peculiar situation of the Convention,—the Exposition itself providing ample social entertainment and the special arrangements for an International Congress calling forth an unusually large representation of foreigners. The scien-



The Inside Inn.

tific work of the Association was of a high grade and of an abundant amount, the program for this meeting being the most complete and best rounded program the Association has yet been able to provide. While no special entertainments were provided for the Association the members were individually invited to the reception given by the Missouri Commissioners to the Governor and military guests and a banquet had been arranged for, which had to be given up on account of the many conflicting interests.

The Inside Inn, the Association headquarters, proved to be a disappointment to many, although men accustomed to the hard-

ships of campaigning could hardly complain of the conditions there presented. It was an enormous set of pigeon holes accommodating nearly five thousand people, built of paper, plaster boards and a little staff, which combined to form a series of sounding boards which seemed, in the small hours, to magnify every noise a thousand fold. The enormous crowd of people seeking entertainment at this caravansery was such that the individual was practically wiped out. It was far more difficult to find a guest whom one desired to meet than to locate the proverbial needle in a hay stack. Nevertheless most of the guests of the house, after remaining a few days, were able to adapt themselves to the conditions and to endure the situation with a considerable amount of comfort.



The Badge of the Thirteenth Annual Meeting.

The tremendous distances presented upon the grounds made it a matter of real consideration in endeavoring to meet an engagement at a definite hour. It took half an hour to go from the Hotel to the Hall of Congresses, in which the meetings were held, even when the Intramural Railway was utilized, and to walk from one to the other at the ordinary rate of gait took nearly an hour.

A piece of courtesy upon the part of the Association which was highly appreciated by the recipients, was the giving up of the Hall of Congresses on

Tuesday to the Daughters of the American Revolution, the Association meeting being held on that day in Library Hall in the same building as the Hall of Congresses.

The badge of the meeting was the handsomest local badge ever provided as may be seen from the accompanying engraving. It is also of especial interest since under the action of the Associ-

ation it became the last local badge, unless the organization should at some future time vote again to adopt such a badge. It seemed to many of the members of the Association that the insignia of the Association was ample and that the cheaper badges rather belittled the organization than otherwise and for this reason it was voted to dispense with such decorations in future.

THE OFFICERS OF THE ASSOCIATION, 1904-1905.

AT the recent meeting, there seemed to be no question whatever as to the officers of the Association for the coming year. But one candidate was presented for each of the offices and the vote in the Nominating Committee was unanimous. It has now become a recognized custom in the Association that the presidential chair should be filled alternately by representatives of each of the four elements composing the organization and that the occupants of the Vice Presidential chairs should move upward each year. An election then to the third Vice Presidency means the Presidency of the Association four years later, a fact which adds much to the dignity of the position and to the responsibility of the Association in selecting men to occupy it.

It was a foregone conclusion then that Surgeon General WALTER WYMAN, the distinguished chief of the Public Health & Marine Hospital Service of the United States should become the President of the Association. The persistent and faithful attendance upon the meetings of an unusually large number of officers of the Public Health and Marine Hospital Service demonstrated the loyalty of his Corps to its head. It was fitting that St. Louis, the birth place of General Wyman, should also be the scene of his installation into the Presidential chair of the Association. Of the work of the new President during past years little need be said. He is an administrator of such experience and such success that the greatest results may be anticipated from his administration. His personal enthusiasm in the work of the Association of Military Surgeons is such as to justify the warmest anticipations as to his accomplishments during the coming year.

while his kindliness of nature and tactfulness of disposition should still further confirm the harmonious spirit which now prevails in the councils of the Association.

General Wyman is now fifty-six years of age, having been born in St. Louis August 14, 1848. He received his early education at the City University whence he proceeded to Amherst College where he received the degree of A.B. in 1870 and later the degree of A.M. The St. Louis Medical College was the scene of his professional preparation, conferring the degree of Doctor of Medicine upon him in 1873, a preparation which was further developed by two years work in the hospitals of St. Louis.

Soon after this Dr. Wyman entered upon his life work proper by accepting an appointment as Assistant Surgeon in the Marine Hospital Service. He received promotion to the rank of Surgeon in 1877 and served successively at St. Louis, Cincinnati, Baltimore and New York, after which he was summoned to the headquarters of his Corps at Washington where he served continually until he succeeded to the command of it. During this time he had charge of the publication of sanitary reports and statistics and produced many important works pertaining to this subject. The Purveying Department was also under his direction and by him brought to a high degree of excellence. His main duty however and the work to which, in the latter part of the period previous to his appointment as Surgeon General in 1891, his time was exclusively devoted, was the supervision of the Quarantine Department of the Marine Hospital Service.

General Wyman has evinced especial interest during his entire career in the humanitarian side of his work, having devoted especial attention to the physical conditions affecting seamen of the merchant marine. He brought before the public the cruelties inflicted upon the crews of oyster vessels in Chesapeake Bay and established hospitals for the treatment of their sick and injured. He secured an act for the relief of deck hands on western rivers. He established even before his appointment as Surgeon General a Hygienic Laboratory which has since developed into one of the most important sanitary institutions of the country resulting in many investigations of the highest importance to public health.



**Surgeon General Walter Wyman, P.H. & M.H.S.,
President.—1904-1905.**

He was in charge of the government measures to ward off cholera in 1893 and is still by law charged with administration of national quarantine stations. He established and is chairman of the Yellow Fever Institute of the Public Health and Marine Hospital Service, and originated and established the sanatorium for tuberculous sailors at Fort Stanton, New Mexico. Under his direction are twenty-two Marine Hospitals and a large number of Relief Stations, giving relief annually to more than fifty thousand sailors of the merchant marine. He also has charge of national quarantines in Porto Rico, Hawaii, the Philippines and Alaska,



**Major Albert Henry Briggs,
First Vice President.**

together with the marine hospitals located there. He is especially interested in the international sanitation of cities, particularly seaports, with a view to rendering rigid quarantine unnecessary and is the author of a plan for an international agreement by the republics of the western hemisphere to bring this about.

The work of sanitary improvement, to which Dr. Wyman's career has been devoted, has involved many valuable contributions to public health literature, which have appeared in the form of professional and popular journal articles, addresses and communications, in addition to the massive series of Reports issued under his supervision during the past fourteen years.

He has not permitted his official administrative duties to distract his attention from professional work, but has constantly kept up his relations with the profession. He early became a member of the Association of Military Surgeons of the United States. At the recent meeting of the American Public Health Association he served as president. He is an active member of the American

Medical Association, the American Medical Editor's Association, the National Geographical Society, the Climatological Society, and the Washington Academy of Sciences. In 1897 the Western University of Pennsylvania recognized his work with the honorary degree of LL.D.

Under the administration of a man so fitted for executive work by long and successful experience, the Association may well anticipate an exceptionally successful year.

MAJOR ALBERT HENRY BRIGGS has from the beginning of the Association been



**General Robert M. O'Reilly,
Second Vice President.**



**Rear Admiral P. M. Rixey,
Third Vice President.**

one of its most active and efficient members. He has been a medical officer of the 65th Regiment of the National Guard of New York for a quarter of a century, twenty-one years of the time as Major and Surgeon, during which time the ties of friendship between himself and the Regiment have grown so firmly that he has uniformly declined offers of promotion which would necessarily carry him away from the Regiment. During the last year Major Briggs again declined promotion for this reason. No man has done more for the Association and to no one is the

Association more strongly indebted than to its First Vice President.



**Major Herbert Alonzo Arnold,
Treasurer.**

geons, the rehabilitation of the Medical Corps itself are all important developments of General O'Reilly's management of his bureau which augurs well for the administration of the Association when he shall have succeeded to its Presidency.

The new member of the list of officers is REAR ADMIRAL PRESLEY M. RIXEY who was elected to represent the Navy as a Vice President. Dr. Rixey has long been an earnest and active supporter of the Association of Military Surgeons and his friendship

It is very fortunate that the Medical Department of the Army is represented in the Vice Presidential chair by the charming personality of SURGEON GENERAL ROBERT MAITLAND O'REILLY. It was expected that an officer of the experience, tact, judgment and energy of General O'Reilly would make a deep impression upon the Surgeon Generalcy during his occupancy of that office. The reorganization of the Hospital Corps, the substitution of a Medical Reserve Corps, for the corps of Contract Sur-



**Major James Evelyn Pilcher,
Secretary.**

has been of the highest advantage to the organization which now takes great pleasure in honoring him by placing him in line of election to its highest office. Admiral Rixey has done much for the Naval medical service, his most recent accomplishment being the enforced recognition of the right of medical officers to command in their own departments. Hitherto Naval medical officers have been simply officers in charge of Hospitals, etc., now they command,—a matter of very great moment to the service, although to outsiders it may seem but a play upon words. The entire membership, wherever located, will greet the announcement of Admiral Rixey's official connection with the Association with great pleasure and anticipate great advantage from it.

It is hardly necessary to speak of the Secretary and the Treasurer, the two remaining officers,—like Tennyson's Brook,

"Men may come and men may go,
But they go on forever."

Their work during the past year has passed the approval of the Association and they promise to continue in the future as in the past, to labor with an eye single to the best interests of the organization.

The Surgeon Generals of the United States Army.

XIV. BRIGADIER GENERAL ROBERT MURRAY,
SURGEON GENERAL OF THE UNITED STATES
ARMY, 1883-1886.

BECAUSE of the sudden death of General Crane in 1883 the contest for the surgeon generalcy was reopened and the official and political friends of all the ranking medical officers were besieged to use their influence in favor of the anxious candidates. It had been decided, upon the promotion of Colonel Crane to be Surgeon General that the office of Assistant Surgeon General, although the incumbent was but a Colonel, was a grade superior to that of the other medical officers of the same rank, and when Colonel Crane was promoted to be Surgeon General, Colonel Robert Murray the then senior Colonel was commissioned



BRIGADIER GENERAL ROBERT MURRAY,
SURGEON GENERAL, U. S. ARMY,—1883-1886.

as Assistant Surgeon General, although he was not brought to Washington to assist the Surgeon General as in the case of his predecessor. President Arthur then very wisely advanced the Assistant Surgeon General to the head of the Corps and Dr. Robert Murray became Surgeon General of the Army.

General Murray was born at Elkridge, then in Anne Arundel Co., Maryland on August 6, 1822. He received his early education at the public schools of his home, supplementing the facilities there afforded by the instruction of private tutors in languages. In 1838 and 1839 he experimented in business affairs in the counting room of Mr. W. G. Harrison in Baltimore, but professional life having greater attractions for him he transferred the scene of his efforts to the University of Maryland and entered upon the study of the healing art. In 1843, he took his degree of M.D. at the University of Pennsylvania, and further developed his knowledge of medicine by a year—1844-1845—at the Baltimore City and County Alms House Hospital.

He then went before an Army Examining Board, and readily became an approved candidate. Accepting a contract as Acting Assistant Surgeon, he was ordered to Fort Gratiot, Michigan, where in July 1846 he received his commission as Assistant Surgeon in the Army to date from June 29 of that year. Soon thereafter he took passage on the transport ship "Susan Drew" en route from New York to San Francisco, a six months voyage around Cape Horn. He served at Los Angeles, Monterey, and Camp Far West in California during the next four years, when he was given an eastern station at Fort Independence, Boston, Mass., for a year. In 1852 he was selected by Surgeon W. G. Mower, the Attending Surgeon and Medical Purveyor in N.Y. City as his assistant; upon the death of Surgeon Mower in 1853 he continued on duty as Attending Surgeon and Medical Purveyor until the summer of 1854 when he was relieved and ordered to California where he remained until the outbreak of the war of the Rebellion in 1861, receiving meanwhile in June 1860, his promotion to the grade of Surgeon.

Upon his arrival in Washington Major Murray was put on duty as a member of the board to examine Brigade Surgeons of

Volunteers and after the Battle of Bull Run was employed in establishing Hospitals in Alexandria.

In September 1861 he was ordered to the field and successively employed during the years 1861 and 1862 as Medical Director and Medical Purveyor with the commands of Generals Robert Anderson, William Tecumseh Sherman, Don Carlos Buell and W. S. Rosecrans in Kentucky, Tennessee, Mississippi and Alabama. During this period he carried an especially heavy load of responsibility, being widely separated from the sources of supply and with the aid mainly of inexperienced medical officers. In every emergency however, he came successfully to the front with ample, although at times necessarily crude, provision for every exigency.

His exceptional administrative capacity was then recognized by his detail in 1863 as Medical Purveyor in Philadelphia where millions of dollars passed through his hands in connection with the medical supply of the vast forces in the field. In 1865, he was transferred to the Pacific coast, where he also conducted the medical purveying work of the far west. When the Army was reorganized into a peace establishment in 1866, he was appointed an Assistant Medical Purveyor with the rank of Lieutenant Colonel. He continued in charge of this work in San Francisco for eleven years although promoted in that time to the grade of Colonel and Surgeon in June 1876. This service was then followed by two tours of four years each as Medical Director of the Divisions of the Missouri and of the Atlantic respectively. It was while on duty at the latter station in December, 1882, that he was commissioned as Assistant Surgeon General and on November 23, 1883, as Surgeon General of the Army.

With the promotion of Colonel Murray, the office of Assistant Surgeon General ceased to be the second grade in the Medical Department of the Army, it being then ruled that the Assistant Surgeon General was simply one of the Colonels in the Medical Corps, and the Senior Lieutenant Colonel, Dr. Glover Perin, was promoted to the vacancy. This rather illogical situation continued until in 1892 all the Colonels became Assistant Surgeon Generals.

The administration of General Murray was a conservative and harmonious one, attention being devoted rather to the improvement of existing conditions than to the initiation of new movements. General Murray was made an honorary member of the Association of Military Surgeons of the United States soon after its organization and has uniformly maintained his interest in its affairs.

Upon his retirement, August 6, 1886, he took up his residence at the place of his birth and is still living, 1904, in the evening of a distinguished and successful life at his boyhood's home in Elkridge, Maryland.

MADNESS IN ARMIES IN THE FIELD.

DR. Paul Jacoby, Physician-in-Chief to the Provincial Asylum of Orel, Russia, strongly urges, says the *British Medical Journal*, the necessity of a special psychiatric service for soldiers on campaign. The privations and fatigues of active service, the nervous tension caused by ever-present danger, the frequent mental shocks, alcoholism, and wounds, all predispose to madness. In the Franco-Prussian war Dr. Jacoby was struck by the number of cases of mental disorder, mostly degenerative forms and psychical traumatisms, which came under his observation. Inquiry among Russian medical officers who served in the war with Turkey in 1877-8, showed that a large number of acute psychoses occurred among the troops. Such diseases were also very common among the Russian soldiers in the war with China in 1900, and many men who had gone mad were shot that they might not fall into the hands of Chinese torturers. During the present war many cases of delirium have been observed, especially in the garrison of Port Arthur. On board the *Manchuria*, when taken by the Japanese, there were found fourteen insane soldiers who were being sent back to Russia. "Let us try," says Dr. Jacoby, "to imagine the condition of these unhappy men after a six weeks' voyage spent entirely in the hold of the ship." In European wars the need for special provision for the care of lunatics dur-

ing hostilities does not make itself acutely felt, for there are always asylums of some kind within reach. But in warfare in uncivilized countries, where distances are extreme and there are no railways to shorten them, where the food supply is scanty and precarious, and where the climate adds to the general misery of things, the lot of such unfortunates is truly wretched. There are, according to Dr. Jacoby, no lunatic asylums of any kind in Manchuria; the "departments for the insane" of the provincial hospitals of Siberia are "simply appalling" and they are full to overflowing. To transport sufferers from nervous or mental disturbance a distance of 10,000 kilometres in time of war by a railroad encumbered with military trains would deprive them of all hope of cure. The novelty of the conditions under which modern warfare is conducted adds greatly to the strain on the nervous system of the combatants. Dr. Jacoby compares the sinking of ironclads by the explosion of torpedoes and mines to earthquakes and volcanic eruptions which, it is well known, are accountable for much mental disorder. He thinks it is likely that these new forms of shock will produce new forms of neurosis and mental disorder. Medical officers have already more than enough to do in looking after the sick and wounded, and there are grave objections to placing insane patients among the ordinary occupants of the military hospitals. Dr. Jacoby thinks that if arrangements could be made for the immediate treatment of insane soldiers in separate tents under special care they would have a good chance of recovery. He is of opinion that the crimes of violence, rape, etc., which are so common among soldiers in the unbridled license of war are largely due to mental disorder, and that such cases would be more effectually and more justly dealt with by medical ministration to the mind diseased than by court-martial.

Original Memoirs.

AN IMPROVED METHOD OF STANDARDIZING THE RECRUIT.

By HENRY G. BEYER, M.D.,
SURGEON IN THE UNITED STATES NAVY.

IN order to maintain the United States Navy at its present numerical strength, it is estimated that about 12,000 men annually must be recruited. If recruiting means anything, it signifies the separation by a medical officer of the physically fit from the physically unfit, of the mentally sound from the mentally unsound, of good timber from bad timber for a most serious and important service. There are but very few officers in either service who are not, sometime during their career, called upon to perform this duty and yet it seems as if a very small minority of them ever attained to a full appreciation of its importance to the service. All the more, however, is this appreciated by the few who have enjoyed the advantages of long service with exceptional experience in recruiting, as an instance of which I may cite the quite recently published and very strong "Plea for a Higher Physical, Moral and Intellectual Standard in the Navy" by Medical Inspector Howard E. Ames of the Navy. There can never be any doubt about the fact that the service, as a working body, can never be better than its individual parts and that the difference between faulty and correct recruiting is bound to make all the difference between a naval force on paper, representative only of so many names and one, on the rolls of which every name represents the full value of a man.

The Significance of a Physical Examination.—With the aid of a physical examination, as this is understood at the present day, the experienced medical examiner selects from a given number of candidates a group of men who are superior to those left

over and who are to be rejected. This process of selection is intended not only to separate the physically perfect from the physically defective but rather to select from the former an exceptionally superior lot. Experience in recruiting has abundantly shown that there is plenty of good material to select from in the United States, if we would take the trouble to look for it and, having found it, employ the right method in making the selection.

Without taking up your time and going into the details of all the different phases of recruiting I wish to speak to you on what I am convinced will be a decided addition to and improvement in our method of selection right at the beginning. I have in mind the use of percentile grade tables, made according to the system of Sir Francis Galton of London. After an experience of over twelve years with these tables, I am impelled to recommend them to you most warmly, as most reliable aids in your duty of recruiting. In order not to be misunderstood, I should like to emphasize the fact right at the beginning that it is my intention to recommend their use merely as a guide to the examiner, merely as a means, not as an end. But when used in this sense, I know of no one single step in the method of the systematic selection of recruits that gives the examiner so much and such absolutely correct and definite information as do these tables.

For a number of years past, a table of physical standards has been supplied to the different recruiting offices and stations. On this table definite weights and chest girths are attached to different heights. The supposition is that definite weights and chest measurements bear a definite relation to the height of the human body regardless of age which is, in itself, a fundamental error. Thus, a youth of 15 years of age, measuring 5 feet 6 inches in height, need not weigh more than 110 pounds and measure more than 30 inches around the chest, in order to make him a perfectly normal and symmetrically developed subject *for his age*; while the man, ten years his senior, and of the same height, must weigh 143.6 pounds and measure 34.3 inches around his chest, to make him come up to the same grade as the boy, for his age or 25 years. This single example must do to show that, lest we deny age its

due and important bearing on the physique, we are just as likely to reject a normal physique and accept a poor one as we would be to select a good one and reject a poor one.

It would be both incorrect in principle as well as unfair to the boy to expect him to furnish measurements in certain dimensions that are not normally contained within the limits of his age. The percentile grade tables of Sir Francis Galton are free from this defect. They simply give all the dimensions that can be found within the limits of the same age, in terms of definite measurements, divided into percentile grades. With the aid of such tables which can be prepared by any one from physical examination records, the medical examiner, after determining the age of the candidate before him, can at once determine with accuracy the percentage position or relation of the examinee to all the rest of the men or boys of his age. He knows that, for instance, a boy whose height or weight or chest girth falls under the column in the table marked 30th percentile grade is taller, heavier or larger around the chest than 29, and shorter, lighter and smaller around the chest than 70 of the boys out of a hundred or more boys *of the same age*. A boy's physical rank is thus at once determined with accuracy and with as much fairness as measurements and calculations can be depended upon for doing it. Providing the measurements have been taken with care, no one can add to them nor take away from them. In no other part of the examination can the examiner find out more in so short a time as regards the physique of his recruit as he can with these tables and I, therefore, unhesitatingly recommend their employment.

Such tables have been published in the United States by Henry P. Bowditch, Wm. T. Porter and myself covering a life period from the fifth to the thirty-fifth year. When intended to be used in the selection of recruits, these tables had perhaps better be prepared from homogeneous material such as is available in the accumulated examination records in the books of recruiting offices. All examination tests that can be expressed by numbers may be represented in these tables including the sense of hearing and distant vision.

Some of the facts brought out by this method of selection.

In 1900, while on duty at the navy yard Boston, it happened that I was detailed as member of an Examining Board. Our duty consisted in the examination of about 85 applicants for positions as navy yard apprentices; the examination was to be both mental and physical. The novelty in this examination was that the candidates were to be marked on their physical as well as on their mental examination. I determined to apply the tables of percentile grades and give to each boy the grade into which he belonged as determined by his measurements. The method of marking was simple, though perhaps best exemplified by a definite case: The boy's age is calculated from the nearest birthday and found to be fifteen years; he is measured in the usual way and his height is recorded as 64.3 inches. Looking at the table of heights, we first find the line for the fifteen years old boys and follow that line until we come to 64.29" which is the mark nearest his recorded height; looking above this number we see the percentile number (50) under which this height stands. This number is the mark which the boy is entitled to receive for his height; he happens to be an average or mean boy for his age so far as height is concerned. This same process is gone through with as regards the weight and chest circumference of the boy by referring his actual measurements to the respective tables in these dimensions. The various percentages are then added together and averaged. The average number of all the percentile grades thus obtained constitutes the boy's physical rank, his final mark for his physical examination. For further details I must refer you to the original papers on this subject. Suffice it to say here, that when all the examination marks had been recorded and a comparison was made between the mental and physical marks, it was found that those boys who had made the highest mental records, also had left the highest physical records and vice versa.

This result was so startling that I determined to follow it further with a larger number of children. To this end nearly 3,000 Cambridge school children were measured and their measurements compared with their standing in school with the same results as had been obtained with the small number of apprentices

examined before. We cannot, therefore, escape the conclusion that there exists an important and very close correlation between the physique and the mental qualifications of children. These facts in their application to the subject of recruiting must now seem obvious; their value as a means of selection must be considered as very great, especially so in children and youths.

The Educational value of physical records. Besides the high scientific value which our studies of the physical records of growing children have yielded with regard to growth and development, these records can be made to have an educational value upon the child itself. Perhaps the strongest and the most persistent stimulus to mental exertion which schoolboys experience is derived from the competition among them for high examination marks. An incorporation of a boy's physical record into the total of his examination marks would undoubtedly beget in him the same interest in that part of his record and result in a serious attempt on his part to improve it, when nothing else would. The significance of a good physique being admitted, the advantages of arousing a boy's own interest in his physical development must be obvious. Of most undoubted advantage would this incorporation of the physical record be in naval and military educational institutions. The cadet as well as the young soldier with his physical marks tacked on to his permanent examination record would become much more earnest in his attempt to improve upon it. That this can be done has been sufficiently shown by a study of a boy's annual physical examination records. The energetic ones may be observed to work themselves into higher percentile grades in all the dimensions from year to year while the less energetic ones either remain behind or fall short even of those in which they were found on previous examination.

Some of the reasons why it behooves Americans to be particularly careful in the selection of their recruits. Fifty years ago, the best people in Europe rarely, if ever, served in the armies of their respective countries; the next best furnished substitutes by purchase. It was, then, from the lowest ranks of society that the common soldier was recruited. In order to show that the importance of the duty of recruiting was, even in those days, by

no means underestimated, I need only quote a few extracts from a manual on this subject, written in 1840 by Thomas Henderson, Asst. Surgeon, U.S. Army and which read as follows: "In a financial, a political and perhaps, I may add, in a medical point of view, I am not aware of any part of the duty of a medical officer which is of more importance than the inspection of recruits and the examination of inefficient soldiers; and, consequently these duties deserve a very careful consideration." (Marshall on Soldiers).

"The duty of inspecting recruits and conscripts requires the utmost impartiality, skill and circumspection on the part of the medical officer." (Austrian Army Regulations).

"The duty of inspecting recruits and of determining whether they are fit or unfit for the military service of the country, is one of the most difficult and responsible an army surgeon has to perform." (Prussian Regulations.)

It was Prussia which of all countries first recognized the important fact that the very best a country produced were none too good to serve as soldiers in the army and all those countries that ever came in conflict with that army after that time, found themselves compelled to follow in the lead of Prussia.

The impression prevails among those who have not given the subject careful attention that, in European countries, every man after reaching the age of 20 must serve in the army. We will see later, that this is a mistaken notion. While it is true that every male, after reaching the maturity age, must present himself before the Board of Inspection, a comparatively speaking small percentage is selected for active military service. According to Lowenthal, in Germany, Austria and Russia from 160-200 are selected out of every 1000 conscripts, while in France the number thus selected, on an average obtained from 1889-1900 or eleven years, reaches 683. Our own returns from receiving ships generally show that out of 1000 recruits between 5-600 are enlisted, the rest are rejected. And here, one important factor enters that must be seriously considered in order to arrive at a correct comparative estimate between the conditions as they exist in Europe and this country. In this difference are summed up all the principal

reasons, why it behooves us to be particularly careful in the selection of our recruits: While, in Europe, every man, including the best must present himself and about 20 per cent of these are selected from the top of this lot, in this country, in time of peace at any rate, the best of our people are absent and the inferior ones alone apply and from these we enlist half of them: It is, in other words, from the bottom lot that we must make our selection. Hence it must follow that the recruits which we enlist in times of peace must be inferior to the regulars of the continental armies, except by accident and in individual instances. Hence, also, we may derive the reasons for an explanation of the astonishing and quite remarkable fact of the striking superiority in physique of our volunteer regiments to the regulars, *during a war*, when the very best our country produces voluntarily come to the front in the defense of their country but, whose precious lives are generally shamefully wasted on account of their inadequate training. The fatal mistake that is often made, even by the ablest of our generals and veteran commanders, is, that the high mortality in such volunteer regiments as compared to that of the physically inferior regulars, is due to lack of endurance on the part of the former; when it is in reality due to want of necessary preliminary training, without which no regiment should be allowed to take the field. Given, however, the same *preliminary training*, such volunteers would prove superior to the regulars not only as regards endurance but in every other respect. Without it, in fact, any comparison between the two must naturally be faulty and lead to erroneous conclusions.

Up to the present, every American boy is being brought up with an overwhelming sense of his rights as a citizen of a great and powerful country. The time will surely come, although we may not live to see it, when the American boy will be obliged to cultivate a corresponding sense of his duty to the country of his inheritance. Military service and the regular army will be the school and the gymnasium combined which will give him the training to fit him properly for that part of the duty to which I refer in this connection. In other words, some form of conscription will some day take the place of the present system of profes-

sional soldiering and sailorizing, in this country as it has in the older countries.

Lord Rosebery and Sir Charles Dilke, backed by all the leading military men of England, have recommended a resort to conscription as the only means out of the difficulty with which the English army reform problem is now confronted. When it does come, do not let us make the mistake of allowing the ballot to decide who is to serve, but let a rigid physical examination alone decide, in order to insure the enlistment into the ranks of the best men the country produces. The ballot, a method proposed in England, would make the composition of an army depend on accident instead of upon an intelligent and purposive design. While selection by physical examination such as is proposed in this paper, of the best of those who are obliged to present themselves, will alone decide in the future, which one of two opposing armies will be the better, supposing, of course, that the training is equally good. Such a method of selection would result in enlisting into the service of both the navy and the army the cream of manhood of the country and fit it for service in case of war and finding it prepared both as regards training and endurance, and leave the rest to work in the fields for the time being.

DISCUSSION.

THE PRESIDENT: We have with us Lieutenant Colonel Murray of the British Army, and we should be glad to hear any remarks he may have to make upon the paper we have just heard.

LIEUT. COL. H. W. MURRAY, R.A.M.C.: I do not have much to say on the subject, except to remark that the British use a standard according to age. We take the height, weight and chest measure. If the chest measure is not up to standard he is rejected. If he is deficient in his physical development he is dismissed from the army. In all standards we have to consider the condition of the teeth, and it is rather difficult at present to find a recruit with good sound teeth. As the years go on the condition of the teeth of the people seems to be deteriorating and it is necessary to reject a great many recruits on that account. The fact is that the teeth of the candidates for the army are against them. There is a great deal of discussion going at present as to the cause of the early deterioration of the teeth and many reasons have been given. There is no doubt this fixed standard must be applied to recruits. I think Surgeon Beyer's paper is a very interesting and practical one and must be appreciated by all who have to do with the examination of recruits.

LIEUT. COL. JOHN V. R. HOFF, U.S.A.: I have listened to the paper, Mr. President, with a great deal of interest and a great deal of profit. I had studied Surgeon Beyer's article on naval recruiting and it seems to me that his suggestions are immensely valuable. I have long been convinced, and more convinced within the last two or three years than ever before, that our methods of physical examination are defective, and that we should adopt some more definite method of determining the all round value of the recruit. Whether it would be possible to carry out the Beyer method in determining the average, considering the way in which recruiting in the army is conducted, I do not know. Perhaps we may be able to evolve a method based on his suggestions.

SURGEON BEYER: We limit the men between certain percentages. If you want a larger number of men we make the percentage lower, and if you want a less number we make it higher; we make a difference in the percentage.

LIEUT. COL. HOFF: Do the naval authorities accept that as a final proposition?

SURGEON BEYER: I simply confine myself to recommendations.

LIEUT. COL. HOFF: There are some points I desire to make in regard to the paper. Surgeon Beyer laid emphasis on the fact that the physical standing of the volunteer regiments was superior to that of the regular. Such was not my experience and I carefully watched the volunteers to see how they compared with the regular regiments. Of course the question of training cuts a large figure, but when we come down to the men themselves they did not average as well as the men in the regular army. The difference between the best men and the worst men in the volunteer regiments was too great and the average was not up to the average of the regular service. Though there were some better men, there were many more worse men. We have in the army standards of age and of measurement from which we are allowed to vary within certain limitations, (ten pounds in weight and about 2 inches in chest measure), and very detailed regulations covering the physical qualifications for a recruit. Unfortunately the inexperienced examiners did not know—or ignored—the regulations, and for a time we got very poor material. We are doing a great deal better now than we were doing a year or more ago, when we were getting a class of recruits that caused every commanding officer to cry out in protest. If you have read the annual reports from general officers this year, you will remember they all agree that the recruits have not been up to the proper standard, which means that the examiners have not been up to the standard. This reminds me that I had occasion to inspect one such some time ago, and he was not able to tell me where to look for the apex beat.

LIEUT. COL. F. R. CHARLTON, Ind. N.G.: In the matter of examining recruits for the regular army I would like to know whether there has ever been any understanding other than an optional one as to whether the recruit-

ing officer has the privilege or authority to select the surgeon to examine the recruits. In my own city of Indianapolis we have had a recruiting station for years, and at times it has been a very busy station. The examination has always been severe. I wondered why something might not be done in order that some of the members of our national guard might do this work. There are a great many who would be glad to do it, I am sure, and I rather think it would be better done. I simply inquire to know whether there has ever been any understanding or anything done along the line suggested.

LIEUT. COL. HOFF: As I understand the matter Mr. President, the selection of the examining surgeon within recent times, has been practically left to the recruiting officer.

It goes without saying that it requires an expert not only in physical diagnosis, but in Army Regulations as well, to be an examiner of recruits. Such examinations are beyond the ken of the examiner for life insurance for example, for a good insurance risk would often prove a physically unfit soldier. For this reason the Government should encourage the formation of a class of trained examiners, who might be members of the proposed reserve medical corps.

Some time ago I made a suggestion to the effect that this work be done by medical officers of the National Guard, or members of the Association of Military Surgeons of the United States, to the exclusion of all others, except of course officers of the permanent establishment. I think it would be a good idea as a definite solution.

INSPECTOR GENERAL R. W. COPPINGER, R.N.: I would like to make a few remarks in regard to the procedure of the British Navy in the method of recruiting. In regard to the last point raised, there is a standard rule that no candidate is accepted unless he has passed the standard as applied by a specially qualified naval officer. In the case of recruits from country districts where no naval officer is available, the physical examination is carried out by a local practitioner, and that guarantees the expense of the recruit traveling to the nearest naval recruiting station. We have an officer on the active list and on the retired list specially qualified for that purpose. After the physical standard is applied then the educational test is made, and that is the point determined by the executive officers. One of the difficulties experienced has been the question of teeth. It has been found in a large number of cases that the teeth have broken down, not being able to masticate the hard food used at sea. In order to meet this difficulty different standards as to teeth requirements have been applied from time to time. At the present day we have fixed upon a part of the standard which has been found to work very well. It is that every candidate must have at least four sound opposed molars and must have at least seventeen teeth. We also require that vision be up to the standard, which is 6-0-6. The chief difficulty we have in medical conditions is where we have recurrent epilepsy. The candi-

date is pledged to sign a declaration that he is free from epilepsy. If after the candidate has been in the service one or two years we find he is affected, it is a great satisfaction to trace the failure. With regard to the standard of height, weight and chest measurement mentioned by Surgeon Beyer, I think our standard is a little different, but we do not adopt the method regarding the mental and physical efficiency. However we regard the height, chest and weight, and unless he comes up to the chest measure requirement he is rejected. So the application of height, weight and chest measure takes precedence over other irregularities. Difficulties are sometimes experienced in the application of the age standard. We find sometimes in tracing the career of a doubtful candidate that by notes being made of his teeth and otherwise we have found we are being deceived as to his age, so that standard cannot be looked upon as absolutely reliable. In such cases the recruiting medical officer is allowed to use his discretion.

LIEUT. COL. HOFF, U.S.A.: I fear in what I said I may have created a misunderstanding. The general recruiting in our service is done in the same way as in the British service. Our recruits, taken by a general recruiting officer, are sent to a recruiting depot, and there they are re-examined physically before they are distributed to their different assignments. The recruits other than these, are sent directly to their organizations and are not re-examined. No recruit who has been enlisted is discharged for what is called theoretical disability, even if he has a disability which should have debarred him from original enlistment; having been enlisted he is retained in service until the theoretical defect develops into real disability, (which it does not always do) when he is discharged on account of conditions not incident to the service. Sometimes it takes a long period of service to develop a theoretical into an actual disability, and in the meantime there may come other disabilities for which the man is ultimately discharged. It may become a matter of great importance to the government that all defects, no matter how trivial, be noted on the enlistment paper, for every man who enlists becomes a prospective pensioner. This is another reason why we have to be on guard to prevent the enlistment of men who are suffering from disabilities, and its importance may be gauged by the fact that during the last generation the United States has disbursed nearly thirteen billion dollars in pensions.

**THE UNITED STATES ARMY GENERAL HOSPITAL
AT THE PRESIDIO OF SAN FRANCISCO,
CALIFORNIA, 1901-1902.**

BY COLONEL ALFRED C. GIRARD,
ASSISTANT SURGEON GENERAL IN THE UNITED STATES ARMY.

Part 5.

REPORT OF THE BACTERIOLOGICAL LABORATORY.

BY CHARLES F. CRAIG, M.D.
CONTRACT SURGEON (NOW ASSISTANT SURGEON), U.S. ARMY;
PATHOLOGIST TO THE HOSPITAL.

THE total number of examinations made for a period of time from July 1st, 1901, to May 31st, 1902, has been 11,247. These examinations have been divided as follows:

Examinations of blood.....	3518
Examinations of urine.....	4395
Examinations of sputa.....	1221
Examinations of feces.....	1319
Widal tests.....	63
Malta fever tests.....	14
Blood counts.....	123
Cultures.....	52
Sections from postmortem material.....	542

The following summary shows the work done in the laboratory from October 4, 1899, when I assumed charge, to May 31, 1902:

Date	Blood	Urine	Fec's	Sputa	Widal	Mal.	Bl.C	Cul	Total
Oct. 4, 1899, to July 1, 1900,.....	2464	2071	313	496	561	0	.....	46	5951
July 1, 1900, to June 30, 1901,.....	5815	5935	1116	1251	110	.....	168	50	14445
June 30, 1901, to May 31, 1902.....	3518	4395	1319	1221	63	14	123	52	10705
	11797	12401	2748	2068	734	14	291	148	31101

During this period of time there were 1340 examinations made of sections of postmortem material, which, added to the total as shown by the above table results in 32,441 examinations for the entire period.

Examinations of Blood: For the period of time between July 1st, 1901, and May 31st, 1902, there were 3518 examinations of blood made for the parasites of malarial fever, 63 Widal tests, 123 blood counts and 14 tests for Malta fever. The total number of blood examinations made for malarial parasites for the period of time between October 4th, 1899, and May 31, 1902, has been 11,797, Widal tests 734, Blood counts 291, Malta fever tests 14.

Examinations for Malarial Parasites: Of the 3,518 examinations made during the year for malarial parasites, 175 proved positive. Of the positive cases, 134 were due to the estivo-autumnal parasites, 33 to the tertian parasite, and 8 were combined infections with the estivo-autumnal parasites and the tertian parasite. Of the 134 estivo-autumnal infections, 113 were due to the tertian estivo-autumnal parasite, 11 to the quotidian estivo-autumnal parasite, and 10 were combined infections or infections in which the type of parasite could not be exactly determined. The examinations of blood during this year for malarial parasites have shown a marked decrease in the number of cases of malaria returned to this Hospital from the Philippines. The following summary of the blood examinations made in the Laboratory since October 4, 1899, well illustrates the decrease in the malarial cases:

BLOOD EXAMINATIONS FROM OCTOBER 4, 1899, TO MAY 31, 1902.

Date	Total Blood	Total Malaria	Total Tertian	Total Quartan	Total Estivo Aut'm	Total Tert'n Estivo
Oct. 4, 1899, to July 1, 1900	2467	264	134	3	100	78
July 1, 1900, to June 30, 1901.....	5815	643	220	3	400	327
June 30, 1901, to May 31, 1902.....	3518	175	33		134	113
	11797	1082	387	6	634	518

BLOOD EXAMINATIONS FROM OCTOBER 4, 1899, TO MAY 31, 1902. (CONTINUED)

Date	Total Quotidian Estivo	Combined Tertian & Estivo	Mixed Infections.
Oct. 4, 1899, to July 1, 1900	12	27	10
July 1, 1900, to June 30, 1901.....	64	20	9
June 30, 1901, to May 31, 1902.....	11	8	10
	87	55	29

From a consideration of the above table it will be seen that the greatest amount of malaria discovered at this Hospital was in the fiscal year between July 1st, 1900, and June 30, 1901, during which time there were 643 cases in which the malarial parasites were demonstrated in the blood; although the total number of blood examinations for this year was somewhat above that for 1899 and 1902, the difference is not so great as to invalidate the result so far as the decrease in malaria is concerned. The estivo-autumnal infections still continue to be the most numerous, as they have been since blood examinations have been made at this Hospital. This is contrary to the results obtained in the Philippine Islands, where the tertian infections are said to be much more numerous. I can only account for this by the fact that the estivo-autumnal parasites are very difficult of recognition, and that many cases, because they present a marked tertian paroxysm, have been classed as tertian infections, when in reality they were tertian estivo-autumnal in type.

Classification of Malarial Infections: From the study of 1082 specimens of blood at this hospital, showing malarial parasites and observations in other hospitals and in Cuba, and the careful comparison of the different varieties of parasites observed, I believe that the malarial infections should be classed as follows: Tertian Infections, Quartan Infections, Estivo-Autumnal Infections and Mixed Infections. The estivo-autumnal infections, which have numbered 634 and which I have paid especial attention to, I believe can be divided both clinically and microscopically into 2 classes, Tertian and Quotidian. This classification,

• which I at first did not believe to be correct, has impressed me the more I have studied the parasites involved, as being the only one which, both clinically and microscopically, solves the problem of estivo-autumnal infection. Certainly nothing can be clearer than the clinical symptoms attending the two varieties of fever if the temperature curve is uninfluenced by quinine. The tertian temperature curve is distinctive and is unlike that occurring in any other disease. In previous reports I have shown the morphological difference between the two varieties of estivo-autumnal parasites, and further study has only convinced me that these distinctions are comparatively easy of recognition to one who has had opportunity to make careful examinations of estivo-autumnal cases, and that in all stages of the growth of the parasite there are differences which are distinctive enough to be recognized by one trained in such examinations. The tertian estivo-autumnal infections are altogether the most numerous, of the 634 estivo-autumnal cases, 518 being due to the tertian parasite. This agrees with the results reported by the Italian investigators, who find that in Italy the tertian infections far outnumber the quotidian. It is extremely difficult to get typical cases of either the tertian or quotidian form of estivo-autumnal fever in this Hospital, as nearly all the cases have undergone treatment with quinine, and the temperature curve has become irregular and of no diagnostic value. The examination of the blood, however, in such cases will show the form of parasite which produces the infection.

Combined Infections: Of the 634 estivo-autumnal infections which have been observed, there were only 55 which showed the combination of the two varieties of the parasite. This comparatively small number of combined infections is probably due to the fact that the quinine has obliterated, in those cases which were primarily combined, the weaker parasite, thus leaving a single infection. Had these cases been observed in the Philippines, it is probable that the percentage of combined infections would have been much higher. There were 29 cases in which the type of parasite could not be determined, as the blood showed no well defined organisms but much free pigment and fragmented para-

sites. These cases had been treated for long periods of time with quinine, and when observed here were receiving large doses of the drug.

Latent and Masked Malaria: One of the most important results arrived at from the examination of the blood for the malarial parasites has been the great number of cases of latent and masked malarial infection discovered in soldiers returning from the Philippines. Although the fact is well known that malarial infection may remain latent for a long period of time in some instances, the percentage of cases exhibiting this latency, so far as reported, has not been as large as the results obtained at this Hospital seem to show. Of the 1082 cases in which malarial parasites were demonstrated in the blood, 219 were cases of masked or latent malaria, thus, of the 1082 cases, 20% were of this class of infections.

The estivo-autumnal malarial fevers are protean in their symptomatology, and unless promptly recognized and treated, are very prone to become pernicious; hence the value of a speedy diagnosis, especially when it is remembered that malarial infection is often present without giving rise to typical symptoms. In all such cases the diagnosis can be made only by a microscopical examination of the blood, which should be as much a matter of routine practice in cases of fever as the examination of the urine.

It will be admitted by all students of malarial infections that many cases occur in which the symptoms are masked by those of complicating disease processes, or in which the symptoms are atypical; and it is equally true that malarial infection may exist without producing appreciable symptoms of any kind. In the first case, we say that the malarial fever is "masked;" in the second, that it is "latent."

A masked malarial infection is one in which the malarial symptoms are hidden by those of some other disease, or in which the malarial symptoms are atypical; while a latent malarial infection is one in which, while the parasites are demonstrable in the blood, no symptoms of malaria are present. Regarding these forms of malarial fever Marchiafava and Bignami* say: "All

*Malaria. "Twentieth Century Practice." Vol. XIX.

physicians are aware that there are grave, and sometimes mortal, infections, where the rectal temperature may be little above the normal, or may even be subnormal. When the blood is examined in some of these cases, we may find parasites. The reason for this can be found only in special conditions of the patient's system; just as there may be a lobar pneumonia without elevation of temperature, especially in aged and feeble persons, so may occur grave malarial infections without fever."

Regarding masked forms of malarial fever, Thayer† states as follows: "In a certain number of instances malarial infections may cause distinct symptoms with little or no fever. These instances are not infrequent in improperly treated tertian and quartan infections, where the patient keeps about on his feet, taking perhaps an occasional single dose of quinine, enough to weaken but not to eradicate the disease. Here the process may be kept, as it were, in a permanent stage of incubation. There are, however, other instances where, for a considerable length of time, there may be more or less marked subjective symptoms with little or no fever. During the abortive paroxysm there may be slight flushing with a rise of temperature to a degree or so above normal, which may be followed by a little sweating, but usually fever is practically absent; the temperature really being subnormal during the greater part of the time."

In my work entitled "The Estivo-Autumnal (Remittent) Malarial Fevers" I have discussed somewhat extensively the masked and latent forms of estivo-autumnal fever. The following quotations are abstracted from the chapter dealing with this subject: "In latent and masked estivo-autumnal fevers we include all cases in which the estivo-autumnal parasites may be demonstrated in the blood, but in which either no clinical symptoms are present, or the symptoms which are present are atypical in character."

"I can recall a large number of cases in soldiers who have had their blood examined as a routine measure, in which the estivo-autumnal parasites were found, although there were no symptoms of the disease present. As a rule, in such cases the

†Lectures on the Malarial Fevers.

number of parasites is comparatively small, but there may be much free pigment present and numerous pigmented leucocytes. In blood from the spleen in the latent cases the entire human cycle of the estivo-autumnal parasites can be followed."

"The tertian estivo-autumnal parasite is the most common form found in such cases, although the quotidian form is by no means rare. The only explanation of the fact that the development of the malarial parasite may not, for a considerable length of time, be accompanied by clinical symptoms is either that the parasites are present in too small numbers, or that the individual infected is very resistant to the action of the malarial poison."

"The length of time during which such a latent infection may exist is as yet undetermined, but it is probable that in some cases it may be for many weeks. I recall one case in which the estivo-autumnal parasites were found in the peripheral blood for six weeks before a paroxysm occurred, repeated blood examinations being made during that time. I can recall many cases in which the parasites were found for from seven to fourteen days before clinical symptoms appeared."

"The masked estivo-autumnal fevers constitute the much larger class of cases, and their recognition is of the utmost importance from a practical point of view. Such cases more often present no rise of temperature, and in fact the temperature is often subnormal. Nervous symptoms, such as slight headache, vertigo, neuralgias of various parts of the body, or symptoms referable to some other disease may be present, as diarrhoea, acute and chronic dysentery, pneumonia, typhoid fever, etc."

"It should always be borne in mind in treating diseases in localities in which the estivo-autumnal parasites are prevalent, that some of the most pernicious forms of these fevers are unaccompanied by definite paroxysms or a rise of temperature, and that the temperature is not rarely subnormal. I recall a fatal case of quotidian estivo-autumnal fever in which the temperature never rose above 99° F., and in which the few symptoms present were those of an acute hepatitis. Examination of the blood a few hours before death occurred, showed large numbers of quotidian estivo-autumnal parasites, and the findings at autopsy were typical of death from pernicious malarial fever."

In the last report of the Laboratory I gave a resume of 172 cases of latent and masked malaria, which had been observed up to that time in this Hospital. The total number observed to May 31, 1902, has been 219.

Types of Infection: The total number of cases observed during the period of fifteen months was 219. As regards the type of parasite found, the cases may be divided as follows:

1. Tertian infections.....	49
2. Quartan infections.....	1
3. Estivo-autumnal infections.....	169
Tertian estivo-autumnal infections.....	129
Quotidian estivo-autumnal infections.....	39
Mixed tertian and quotidian estivo-autumnal infections	1

From the above table it will be seen that the estivo-autumnal infections are altogether the most common. This is an interesting fact because the tertian infections in the Philippines are said to be the most numerous, and as also showing that the fevers due to estivo-autumnal infection are much more apt to be masked or remain latent than those due to the tertian form. This may also explain, where routine examination of the blood has not been carried out, the relative frequency in the Philippines, as reported, of the two varieties of malaria. If so large a percentage of estivo-autumnal cases are masked by other diseases or remain latent, it is seen at once how inaccurate may be our statistics, where routine blood examination is not carried out, of the relative frequency of tertian and estivo-autumnal malaria.

All observers who have studied the subject in the Philippine Islands unite in claiming that the tertian infections are altogether the most numerous; but from the examination of the blood of those cases occurring in soldiers who have returned from the Philippines, my experience has been exactly the reverse, the estivo-autumnal infections being altogether the most numerous. But a large percentage of such cases were latent or masked by other complications, and would never have been discovered from the study of the clinical records alone. The relatively large percentage of estivo-autumnal infections which remain latent, or are masked, also proves how important it is that the blood be ex-

amined in every case returning from or residing in a malarious locality.

Character of Parasites: The following table illustrates the various stages in the human life-cycle of the malarial parasites which were observed in the blood in these cases.

1. Tertian infections, total number	49
Hyaline stage.....	5
Pigmented stage, $\frac{1}{4}$ to $\frac{3}{4}$ grown.....	37
Pigmented stage, full grown and segmented.....	7
2. Quartan infections, 1 case; parasite full grown	
3. Estivo-autumnal infections, number of cases.....	169
Hyaline ring forms.....	106
Hyaline ring forms and pigmented forms.....	45
Hyaline ring forms and crescents.....	8
Crescents.....	10

From the above table it will be seen that the pigmented forms of the tertian parasite were generally present in these infections, and there was no difficulty whatever in recognizing the parasite. This was also true of the one case of quartan infection observed.

In the estivo-autumnal forms, however, it will be seen that the hyaline "ring forms" were altogether the most common, and as these are the most difficult forms of the malarial parasite to recognize, it will be obvious how very often such cases would be overlooked by one not accustomed to the examination of malarial blood. While there is no difficulty whatever in recognizing the hyaline forms of the estivo-autumnal parasites, when one has had considerable practice, they are generally overlooked during this stage by inexperienced observers.

The small number of cases of latent and masked malaria which show crescents is somewhat remarkable. In the cases of latent malaria one would expect to find a large proportion showing crescents, as this is a class of cases in which crescents, are said to be most numerous. From the reports of the Medical Officers serving in the Philippines, the cases showing crescents are very numerous, but this rule has not been observed at this Hospital, as comparatively few of the cases of estivo-autumnal malaria have shown crescents in the blood. It is rather difficult to account for this unless it be that the long continued treatment by

quinine has so altered the life-cycle of the malarial parasite that crescents are no longer produced.

Number of Parasites: As regards the number of parasites present in the blood in the masked and latent cases, it may be said that, as a rule, they were few in number. As we have at this time no accurate means of estimating the number of malarial parasites in a specimen of blood, it is impossible to make an accurate classification. It has been my method as regards the number of parasites present in any specimen of blood, to speak of them as "few" or "numerous." In this loose classification I find that the following table represents the number of parasites present.

Infection.	Total No. of Cases.	No. of Parasites.	
		Few.	Numerous.
Tertian.....	49	37	12
Quartan.....	1	1	
Estivo-autumnal.....	169	139	30

The above table is very unsatisfactory in a number of ways, but it is probably approximately correct. The number of parasites in a specimen of blood would, of course, vary apparently upon the length of time spent upon the examination, as the longer the time spent the greater the number of parasites discovered. In the above examinations approximately the same time was spent upon each specimen.

Period of Latency: It is impossible to state accurately the length of time during which the malarial parasites may be present in an individual's blood without producing symptoms, on account of losing sight of the cases before such determination can be made. It may be broadly stated however, that in some cases the malarial parasites may be present for almost an indefinite length of time without producing the characteristic symptoms of malarial fever. In the few cases in which I have been able to make examinations of the blood at frequent intervals, covering a considerable period of time, I have found that this incubation period, as it may be called, may extend from a few days to several weeks. In one case of estivo-autumnal fever, examinations were

made of the blood every third or fourth day for a period of six weeks, and almost every examination showed a few hyaline "ring forms" of the parasite. During this period, however, there were never any symptoms which in the least suggested the presence of a malarial infection. At the end of six weeks I lost sight of the patient, but it is probable that the infection existed for a much longer time without producing symptoms. As a rule, the patients in whom the blood showed the presence of the malarial parasites included in this report developed symptoms within a week after the observation, and some of them in a much shorter time, although several went for two weeks without symptoms.

It is easily conceivable how a weak malarial infection—that is, one in which there are but few malarial parasites present—might exist for a long time without the production of symptoms, due to the small amount of malarial poison present in the body. From a study of the above table it will be seen that by far the largest percentage of my cases are to be placed in this category. The parasites, as a rule, did not number more than eight or ten in a specimen of blood observed for half an hour.

In cases, however, where the parasites were numerous, it was much more difficult to account for the absence of clinical symptoms. There is no experimental data at hand to explain these cases. The most that we can say is that the individual infected is probably immune, to a certain degree, to the malarial poison.

CLINICAL DIAGNOSIS OF CASES.

The following table gives the clinical diagnosis made before the blood of the patients was submitted for examination:

	No. Cases.	Latent.	Masked.
Chronic Dysentery.....	55	0	55
Chronic diarrhoea.....	20	20	0
Pulmonary tuberculosis.....	16	0	16
Fractures and wounds.....	9	9	0
Chronic gastritis.....	5	5	0
Amoebic dysentery.....	4	0	4
Acute bronchitis and pharyngitis.....	3	0	3
Hernia.....	3	3	0
Chronic indigestion.....	2	0	2
Anemia.....	3	0	3

Secondary syphilis.....	2	2	0
Otitis media.....	2	2	0
Acute melancholia.....	2	2	0
Insanity.....	2	2	0
Rheumatism.....	2	0	2
Paralysis.....	2	2	0
Abscess of the liver.....	1	0	1
Arthritis.....	2	0	2
Convalescence from appendicitis operation	1	1	0
Arthritis deformans.....	1	1	0
Furunculosis.....	1	0	1
Retinitis.....	1	1	0
Varicocele.....	1	1	0
Tachycardia.....	1	1	0
Cellulitis.....	1	0	1
Measles.....	3	0	3
Pneumonia.....	1	0	1
Chancroid.....	1	0	1
Acute constipation.....	1	0	1
Hemorrhoids.....	1	1	0
Adenitis, cervical.....	1	1	0
Appendicitis.....	1	0	1
Hemiplegia.....	1	0	1
Diagnosis undetermined.....	67	67	0

From a consideration of this table it will be seen that by far the greatest percentage of cases of masked and latent malaria occurred in patients suffering from diseases of the alimentary tract, especially dysentery and diarrhoea. Next in frequency comes the diagnosis of pulmonary tuberculosis.

In classifying these cases into latent and masked infections, as I have before noted, it is sometimes impossible absolutely to determine which variety of infection really existed. Some of the cases, from a study of the clinical charts, show a preponderance of symptoms in favor of the diagnosis made, and in these cases it is easy to class the malarial infection as "masked." In the study of many other clinical histories, the entire absence of any symptoms which could be attributed to malaria make it easy to decide that the malarial element was "latent;" but there occur a considerable number of cases in which the symptoms were so confusing that the distinction could not be made. Classified as

nearly as possible in this manner, the 219 cases were divided as follows:

Masked infections.....	98
Latent infections.....	121

Chronic Dysentery: Fifty-five cases in which the diagnosis of chronic dysentery was made showed the presence of malarial parasites in the blood, the type of parasite being the estivo-autumnal in forty-five cases, and the benign tertian in ten cases. In all cases in which the diagnosis of "chronic dysentery" was made, it was found by a study of the clinical charts that the dysentery existed and evidently masked the malarial complications. All the cases were having numerous bowel movements, and all showed slight rises in temperature at irregular intervals. These rises in temperature are characteristic of dysentery, and a study of the temperature charts proves that the existence of the malarial infection could not have been determined by the temperature curve. There probably occurred among the dysentery cases a small number in which the malarial infection was latent, but in the great majority of cases there were symptoms present which, taken alone, would have suggested malaria; but taken with those which are present in dysentery, completely obscured the malarial condition. I have, therefore, classed all the cases of malaria occurring in chronic dysentery as masked infections.

The occurrence of "masked malaria" in cases of dysentery originating in the Tropics is a matter of great importance, as the malarial element in so large a proportion of the cases is not recognized, and undoubtedly helps in producing the marked debility of the patient, which is invariably present in dysentery cases. In a large number of cases showing the malarial parasites, treatment by quinine caused a marked improvement in the number of bowel movements, and in several cases it must be confessed that the dysenteric symptoms were directly due to the malarial infection, as they quickly succumbed to quinine. Almost all of the dysenteric cases gave histories of previous malarial infection in the Philippines, the primary infections being diagnosed and treated. The treatment, however, was not continued, and there resulted a chronic malarial infection, presenting few typical symp-

toms, but which aided in the depletion of the patient's strength and vitality. The treatment of these cases with quinine invariably resulted in benefit.

Chronic Diarrhoea: In twenty cases diagnosed as chronic diarrhoea malarial parasites were demonstrated, and in all these cases the infection was latent. Symptoms of diarrhoea were present in all, but there was no rise of temperature, and no symptoms which could be interpreted as being malarial in character. Treatment by quinine in these cases quickly caused the disappearance of the parasites from the blood and, as a rule, resulted in the general betterment of the patient's condition; so that, while the cases have to be classed as latent, on account of the absence of symptoms, the improvement in the patient indicates that the malarial infection had some influence in the progress of the diarrhoea.

Pulmonary Tuberculosis: Sixteen cases diagnosed as pulmonary tuberculosis showed the presence of malarial parasites, ten cases being due to infection with the estivo-autumnal parasite, and four with the benign tertian. From a study of the clinical histories and temperature charts in these cases, the infection in every case was masked by symptoms which suggested pulmonary disease. Perhaps in no class of cases is the diagnosis of pulmonary tuberculosis made so often as in cases of malaria showing quotidian elevations of temperature. Such cases are often accompanied by a cough, great emaciation, profuse perspiration, and present the picture of pulmonary tuberculosis. This is especially true of cases originating in the Tropics, the emaciation in these cases being more extreme and the pulmonary symptoms more apparent than in cases originating in the temperate zone. In all of the cases diagnosed as pulmonary tuberculosis the parasites were present in considerable numbers, and treatment by quinine showed in a few days that the infection was purely malarial. The examination of the sputum in these cases for the tubercle bacillus always resulted negatively.

Fractures and Wounds: In all cases diagnosed as fractures and wounds the conditions diagnosed were present, the malarial infection being latent.

Chronic Gastritis: Five cases diagnosed as chronic gastritis showed the presence of malarial parasites in the blood, and in all these cases the malarial infection was latent, as shown by the fact that treatment with quinine did not relieve the condition diagnosed. In all the cases chronic gastritis was present, and in all of them a history of previous malarial infection was obtained.

Amoebic Dysentery: The four cases diagnosed as amoebic dysentery were severe forms of that disease, numerous amoebae being present in the faeces. The malarial infections, so far as any symptoms shown by the clinical histories, were masked. The occurrence simultaneously of the malarial parasite and the amoeba, both protozoan organisms, is of interest. Treatment by quinine in these cases resulted in benefit. But, as cases of amoebic dysentery are also benefited by quinine, it is impossible to say how much actual benefit was derived from the elimination of the malarial element. It is a fact, however, that all of these cases improved much faster after the treatment for malarial infection than they had previously.

Acute bronchitis and pharyngitis: In the three cases diagnosed "acute bronchitis and pharyngitis," the malarial infection was masked. All three cases were infected with the estivo-autumnal parasites, and the symptoms present were those of bronchitis and pharyngitis. Treatment with quinine in these cases eliminated the malarial element and also the bronchitis, but did not improve the pharyngitis; so that it is safe to say that the bronchitis present was due to the malarial infection, the pharyngitis occurring as a complication.

Abscess of the liver: The case diagnosed as "abscess of the liver" presented, from a study of the clinical history and the temperature charts, all the symptoms which are said to be classical in this disease. The man gave a history of having suffered from amoebic dysentery in the Philippines, but on arrival at this hospital presented no evidence of dysentery. Examination of the blood showed numerous estivo-autumnal parasites of the tertian variety, and treatment with quinine resulted in the disappearance of all the symptoms.

Other diseases: In the two cases diagnosed as "indigestion" the infection was "masked;" in the three diagnosed as "anemia" the infection was also masked by profound anemia, which was at first supposed to be pernicious; in the case diagnosed "arthritis" the infection was masked by this disease. This was also true of the cases diagnosed furunculosis, rheumatism, cellulitis, measles, pneumonia, chancroid, and acute constipation. In the cases diagnosed as hernia, secondary syphilis, otitis media, acute melancholia, insanity, arthritis deformans, retinitis, varicocele, tachycardia, paralysis, hemorrhoids, and cervical adenitis, the malarial infection was latent, there being absolutely no symptoms pointing to such infection.

Undetermined diagnosis: In the sixty-seven cases in which no diagnosis was made previous to an examination of the blood, the malarial infection was "latent." In most of these cases quinine was immediately given, so that it has been impossible to ascertain how long the infection would have persisted without producing some symptoms. In none of the cases was there any suspicion of malaria, as a careful investigation of the clinical histories and temperature charts demonstrates.

Most of the cases were soldiers who had returned from the Philippines having suffered there from long-continued dysentery or diarrhoea, and were returned to this country because of their debilitated condition. Active symptoms of the diseases from which they had suffered in the Philippines were not present in any of these cases, the chief symptoms complained of being general weakness, which prevented them from doing the duties of a soldier. I have taken considerable care to inquire into the medical history of these cases, in order to find out, if possible, whether or not the infections were masked by existing symptoms or were actually latent, and in every case, from the history obtainable and the present condition of the patient, the infection would have to be classed as latent. Most of the cases gave a history of having suffered from malarial attacks either in Cuba or in the Philippines, but considered themselves as rid of malarial infection.

Source of Infection. In the 219 cases of masked and latent

malaria the source of infection has been traced in 180. Of the 180 cases, 120 suffered from their first attack of malaria in the Philippine Islands, while sixty gave a history of having had their first attack in Cuba.

Of the sixty Cuban infections, it was found upon inquiry that these infections occurred during the American invasion at Santiago, and had persisted irregularly up to the present time.

In the case of the Philippine infections, the time during which the patients had suffered from malaria varied from six months to two years.

The history of all the cases showed exacerbations of the malaria at irregular intervals following the primary attack, but all of them gave a history of not having had an attack for at least one month before arrival at this Hospital.

During the period in which I have kept records of masked and latent malarial cases there have been a few instances, especially in the cases which were latent, in which no previous history of malaria could be obtained. Most of these cases had been in camp at the Presidio, California, for some weeks. They had never suffered from malaria either in Cuba or in the Philippines, so that I have been compelled to consider San Francisco as the locality in which these patients became infected. Up to within a comparatively recent period San Francisco has not been considered as a malarial region, and it has been denied by competent investigators that the estivo-autumnal type of malaria ever originated in San Francisco or the country immediately surrounding it. From my observations in the cases just spoken of, I am satisfied that cases of estivo-autumnal fever do occur, and have probably been imported by infected individuals returning from the Philippine Islands. As stated in the opening paragraphs of this report, all that is necessary to establish a malarial infection in any locality is an infected individual and mosquitoes of the genus *Anopheles*. I have repeatedly found mosquitoes of this genus in the military reservation at San Francisco, and it can easily be seen how, with the large number of infected soldiers returning from the Philippines, malaria may become endemic in this locality. The following case of estivo-autumnal fever is of interest in this connection.

The patient, a young girl, was referred to me for a blood examination by the physician attending her. She had been suffering for some time from slight fever, accompanied by chilly sensations at irregular intervals and by marked anemia. She had never suffered from malaria previously, and had not been out of San Francisco within a period of two years. The attending physician suspected malaria, and the blood examination showed numerous "ring forms" and pigmented forms of the tertian *estivo-autumnal* parasite. Upon careful inquiry as to the source of her infection, the following facts were elicited:

Patient lived in a locality situated between two Chinese vegetable gardens. The water used for irrigation is obtained from sunken wells which are open and filled with stagnant water. The mother of the girl stated that the people living in this locality were greatly troubled by mosquitoes; and upon inquiry of people living in the vicinity, I was told that mosquitoes were plentiful and very annoying. I also learned that numerous cases of malaria had occurred in this locality. This case proves conclusively that *estivo-autumnal* malaria may originate in this city, and also shows how important it is to trace out the source of infection in malarial cases. By the careful use of kerosene in the wells, which are evidently the source of the mosquitoes, it is not too much to believe that malarial fever may be entirely eradicated in the locality spoken of.

Post-mortem Findings in Latent and Masked Malaria:—Of the 219 cases of latent and masked malaria, five proved fatal from the diseases which complicated them. Three cases of masked malaria died from chronic dysentery, as well as two cases in which the infection was latent. All of the cases showed *estivo-autumnal* parasites in the blood.

In a future communication I shall give in detail the gross and microscopical pathology of these cases, at the present time only touching upon the conditions found.

In the cases of masked malaria, the liver, spleen, and brain showed marked pigmentation, and upon microscopical examination showed all the conditions of malarial infection. The capillaries of the brain contained numerous *estivo-autumnal* parasites,

much pigment, and numerous pigmented leucocytes. This was also true of the capillaries of the liver. Sections of the spleen showed large numbers of hyaline and young pigmented forms of the estivo-autumnal parasites, a few crescents, many pigmented leucocytes and an immense amount of free pigment.

In the two cases in which the malarial infection was latent, the chief pathological changes were found in the spleen and liver. Both organs were much pigmented, the spleen being considerably enlarged. Sections of the liver showed considerable free pigment within the capillaries, but no malarial parasites. Sections of the spleen showed an immense amount of pigment, numerous pigmented leucocytes, and comparatively few hyaline and pigmented parasites. No crescents were observed in the sections of the spleen. The condition of the section of the spleen, as compared with those in which the malarial infection was masked, seemed to be one simply of degree, the masked infections showing a much greater pigmentation and many more parasites than the latent infections.

These cases, especially those which were latent, are of great interest, as the pathological conditions found prove that the evolution of the malarial parasite may go on within the spleen and other internal organs without the production of definite clinical symptoms.

Conclusion. From the brief analysis which I have given of these cases of latent and masked malarial fever, it will be seen at once how important an examination of the blood is in all cases of disease originating in the Tropics, or in localities which are known to be malarious. It is an undoubted fact that a malarial infection complicating any disease process invariably injures the patient's chances of recovery, and its elimination, as proven by numerous cases observed at this Hospital, greatly facilitates recovery. Not only is this so, but cases have been observed in which the discovery of the malarial infection undoubtedly saved the patient's life. The discovery of the cases of estivo-autumnal malaria is especially important, as it is this form of the disease that may become at any time pernicious; and may cause death within a few hours.

Widal Tests: There were 63 Widal tests performed during the year, of which 41 were positive. An investigation was carried on as to the etiology of these cases of typhoid, as it was thought that some of them might have originated in the camps at the Presidio. It was found, however, after thorough investigation, that they were all contracted at other ports throughout the United States or in the Philippine Islands, and that none of the cases of typhoid sent to this Hospital have originated at the Presidio.

The use of the Widal test as a diagnostic measure in typhoid fever I believe to be of the utmost value. Since beginning its use in the Army I have performed over 5000 tests, and in only four cases has it proven confusing. These cases did not present the clinical symptoms of typhoid fever, and as they all recovered I cannot say positively whether or no typhoid was present. In 25 cases of the 5000 examinations, the Widal test was positive in other diseases, but in none of these cases could a clear history be obtained as to whether the patient had previously suffered from typhoid fever or not. As I have seen numerous instances in which the Widal reaction was present for from two to five years after the occurrence of typhoid, it is at once evident that some of these cases may have had typhoid fever previously. I believe, if the test is carefully and properly performed, that the possibility of error is so minute as to be of no practical importance.

Malta Fever Test: There have been 14 tests made in this Hospital during the year, for Malta fever by the agglutination reaction, of which four were positive. On account of the interest pertaining to the occurrence of this disease in soldiers of the U.S. Army, I have reported these cases fully, together with the literature upon the subject in the special report on Malta Fever published in the last JOURNAL.

GUNSHOT WOUNDS OF THE URETER—TWO CASES OF URETERO-VESICAL ANASTOMOSIS.

By GEORGE TULLY VAUGHAN, M.D.

ASSISTANT SURGEON GENERAL U. S. PUBLIC HEALTH AND
MARINE HOSPITAL SERVICE; PROFESSOR OF SURGERY
GEORGETOWN UNIVERSITY.

GUNSHOT wounds of the ureter are so exceedingly rare that I feel it to be my duty to report the case which fell under my care. In the history of surgery, so far as I have been able to ascertain, there has been recorded only one authenticated case of gunshot wound of the ureter, and that was the case of the archbishop of Paris who was shot June 29, 1848. The ball entered the right lumbar region close to the spine. There was great depression, pale, anxious countenance, nausea, vomiting, intense pain in back and in the course of the sciatic nerves and paralysis of the lower limbs. Urine flowed from the wound in great quantities and there was none in the bladder. An attempt to remove the ball was made without success and death occurred 18 hours after the injury. A necropsy showed that the ball had passed through the third lumbar vertebra dividing the cauda equina just below its origin and the left ureter close to the pelvis of the kidney and lodged in the psoas muscle.

The doubtful case of Rayer reported by Hennen seems to have been a gunshot wound of the kidney. My case was as follows:

C. T., colored male; aged 30 years, laborer, was admitted to the Emergency Hospital on account of an abdominal fistula which had followed a gunshot wound of the abdomen received October 3, 1903. The ball, a .32, entered about one inch to the inner side of the right anterior superior spinous process of the ilium and just below Poupart's ligament and lodged under the skin behind in the median line having perforated or notched the fourth bone of the sacrum—whence it was removed.

A purulent discharge with symptoms of peritonitis followed and on October 11, my colleague, Dr. W. P. Carr, suspecting

perforation of the bladder or bowel did an exploratory laparotomy in the median line. Numerous adhesions were found but no wound of the abdominal viscera. The wound was closed with drainage in front, and in a week there was a purulent discharge in front through the opening for drainage and behind at the point of exit of the bullet, so, daily, through and through irrigation was used. The patient gradually improved, the discharge became thinner and looked almost as clear as water. On examination it was found to contain a little pus and a trace of urea. December 3, 1903, the patient was discharged recovered with the exception of the fistula in front.

He was readmitted March 15, 1904, for the purpose of getting cured of the fistula, which had continued to discharge since leaving the hospital and kept his clothing constantly wet. A slight discharge also came from the posterior wound. The patient suffered no pain, ate and slept well, was well nourished and able to work. He voided from the bladder about 22 oz. of urine in 24 hours and from the fistula, judging from the amount collected for several hours, by means of a tube, in the fistula, 2 oz. an hour or 48 oz. in 24 hours.

Examination of urine from the bladder gave the following results: reaction, acid, specific gravity 1022, urea 6 grains to the oz., no albumin or sugar—a few pus cells. Fluid from the fistula appeared thin and slightly milky in color, reaction faintly acid, specific gravity 1010, urea 1 grain to the oz., pus cells abundant, a trace of albumin present. A probe could be passed into the fistula in front to the depth of $4\frac{3}{4}$ inches when it was arrested by a hard body, probably bone. Through the posterior opening the probe could be inserted to a distance of a little over 2 inches.

A diagnosis of wound of the right ureter was made and on March 19 the patient was operated on. The abdomen was opened along the outer border of the right rectus muscle and afterward the rectus was divided transversely just below the navel. The probe inserted through the anterior fistula was used as a guide, but the operation was tedious and difficult on account of the numerous and strong adhesions of the intestines with one another and with the pelvic walls. The right ureter was finally exposed. It was found dilated to at least twice its normal size and was traced into a mass of unusually dense adhesions in the bottom of the pelvis. In attempting to free the ureter it was broken off at the location of the fistula as was shown by the appearance of the proximal end.

Nature was making a brave attempt to close the fistula, and incidentally the ureter itself, as at the site of the fistula the ureter

was much contracted in calibre—being not larger than one fourth or one fifth of the dilated portion above. The result of this contraction was not only dilatation of the ureter but also probable damage to the kidney, as shown by the small percentage of urea found in the urine from the fistula. Sewing together the ends of the ureter (uretero-ureteral anastomosis) would have been almost impossible even if desirable, at this point, so uretero-vesical anastomosis was decided upon. The bladder was opened in front and a small oblique opening was made through its posterior wall on the right side at a point considerably above the normal opening of the ureter. The end of the ureter was then split into 2 flaps about $\frac{1}{8}$ of an inch long and drawn into the bladder by means of forceps introduced through the anterior and posterior openings. The flaps were spread open and stitched to the inside of the bladder by sutures whose knots were tied on the peritoneal surface of the bladder. The ureter was also sewed to the posterior surface of the bladder at its point of entrance. Very fine silk sutures were used. The anterior wound in the bladder was closed by two rows of continuous sutures—using first, catgut through all the coats, and second, silk, omitting the mucous coat and inverting the first row. The ends of the rectus muscle were united with heavy catgut, the longitudinal wound was closed with through and through silkworm gut interrupted sutures and continuous catgut for the peritoneum and sheath of the rectus. No drainage for the peritoneal cavity; but a small piece of gauze was left projecting from the space in front of the bladder. A catheter was kept in the urethra several days to prevent distention of the bladder, but there was slight escape of urine from the anterior wound for a few days. The patient was discharged recovered April 19. The urine was measured several times before the patient was discharged and was variable—running from 32 to 84 ounces in the 24 hours. April 17 Dr. F. R. Hagner reported as the result of the cystoscopic examination that the bladder mucosa was normal. The new opening of the right ureter was seen as a small papillary mass from which urine flowed. A catheter was inserted into the normal opening of the right ureter for about $1\frac{1}{2}$ inches beyond which it would not go. The scar in the front wall of the bladder was smooth.

The patient was again seen June 15, about 3 months after the operation when he appeared to be in perfect health.

Case 2. Cancer of the Rectum—Inguinal Colostomy—Later Excision of Rectum and Part of Colon—Right Ureter Divided—Uretero-vesical Anastomosis.

Mrs. E. T., white female, aged 47 years; was operated on

June 8, 1903, an inguinal colostomy being done on the left side, on account of ulceration of the rectum which had existed about a year and resisted all treatment. The patient's health improved after this operation and she gained in weight but continued to discharge pus and blood, so it was decided to remove the diseased rectum. March 14, 1904 this was done through the posterior wall of the vagina, but the disease was found to extend so high up the bowel that the abdomen had to be opened and all the rectum from just above the sphincter up to and including a portion of the sigmoid flexure was removed. In doing this the right ureter was accidentally severed near the bladder. The proximal end was split and sewed into the bladder exactly as in the former case.

There was no leakage so far as known either from ureter or bladder, and the patient made a good recovery and was discharged April 29, 1904.

Conservative surgery of the ureter may be said to date from the year 1877, when the first uretero-vesical anastomosis was done by Tauffer (*Deutsche medicinische Wochenschrift* 1877, No. 37, page 438). Previous to that time division of the ureter was usually treated by removal of the corresponding kidney, and even as late as 1893 we find Hermann Thompson stating that complete cure in lesions of the ureter is to be obtained only by removal of the kidney. He condemns grafting into the bladder or intestine as methods not to be recommended. Yet in the same year, sixteen years after Tauffer's case, we find the second successful uretero-vesical anastomosis done by Novaro.

The next year, 1894, F. Westermarck performed the operation under the impression that his was the first successful case in the human being. Since then the enormous increase in the amount of abdominal and especially pelvic surgery has provided numerous occasions for the operation, so that by 1903, Bovee had collected 111 cases of uretero-vesical anastomosis with 7 deaths.

This operation is indicated whenever the lower part of the ureter has been divided or resected and the proximal end is long enough to reach the bladder. I believe it is to be preferred to any of the methods of uretero-ureteral union which have been suggested or practiced for the following reasons given by Baldy:

(1) It is much easier to perform; (2) it is less likely to be followed by stricture, and (3) in case a stricture does form it is more accessible and easier to treat.

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SOME FEATURES OF THE IMMEDIATE TREATMENT AND TRANSPORT OF THE WOUNDED IN NAVAL WARFARE.

By CHARLES F. STOKES, M.D.

SURGEON IN THE UNITED STATES NAVY.

THE types of wounds sustained in military operations at sea are so radically different from the types of wounds inflicted in military operations on shore that the preparations for the treatment of the one class of injuries will be found quite inadequate for the treatment of wounds of the other class.

In the field over ninety per cent of the wounds are caused by bullets of high velocity, small caliber and great penetrating powers but withal surgically humane in their effects. These wounds tend to do well under almost any treatment, while with the skillful use of the first aid dressing, and the let well enough alone plan, seeming miracles have been brought about.

On the other hand in naval warfare over ninety per cent of the wounds are inflicted by shell fragments of varying sizes, shapes and velocities. These shell fragments are at times so hot as to add burning effects to their other destructive tendencies. I cannot call to mind a single shell wound treated by us on board the Ambulance Ship Solace, off Santiago, Cuba, which was not infected. These wounds are lacerated and contused and are oftentimes of enormous extent owing to the jagged and irregular outlines of the missiles inflicting them. It is not surprising that they are so commonly infected when we consider the extent of contused and lacerated surface exposed to contaminating influences. These wounds must heal by granulation, and, in consequence, are likely to become infected during treatment. The shell wounds on the Solace were all second-hand wounds, and were infected before coming to that ship.

Many shell fragments lodge, while others carry everything before them in their flight. The direct wounds of the head and

trunk are pretty generally immediately fatal, while the glancing wounds of the head, trunk and extremities, though often extensive may offer us some chance for recovery. The shock in these cases is often profound.

In many navies the men are supplied with the small first aid packets of the army pattern, which are practically useless in the treatment of shell wounds of any extent.

There are guns on some of our ships so placed that their crews must remain beyond the reach of the medical officers and their assistants during an entire engagement, and the wounded at these points will have to be looked after by their comrades where they fall. What can we do for the wounded in these situations? What sort of immediate treatment is indicated? It is the wounded in these inaccessible parts of the ship that I have had in mind in planning the somewhat crude method of treatment I am about to describe, feeling that if it proves to be efficacious under these unfavorable conditions, it will be equally effective elsewhere. The conditions under which we must treat our men during and after a sea fight are such as to preclude the possibility of giving them the sort of treatment they would and should receive at other times. No one would think of allowing men to lie about the decks ordinarily. I wish it to be understood that my plan of treatment is for battle conditions alone.

The enlisted men of the gun's crews can be taught to render efficient help to their fallen comrades, and when they are made to realize that it is to this sort of assistance that they must turn in their hour of trial, they will take hold of the drills with interest and enthusiasm.

Fortunately shell wounds rarely induce troublesome hemorrhage still there is always considerable ooze from extensive wounds of any sort. To protect these wounds from infection they should be dressed as soon after they are incurred as possible, where the men fall and by their comrades. In my opinion the first aid on the firing line must come from the nearby comrade and so it is with gun's crew remotely placed on board ship.

The indications for treatment are the following:

1. Hemostasis and the prevention of infection.

2. The immobilization of wounded parts and broken bones,
—which assists in,—

3. The treatment of shock.

Of hemostasis there is little to be said as the men are usually fairly well drilled in its details. They and many surgeons err however on the side of carrying their hemorrhage checking manipulations too far. Tourniquets are necessary in extremely rare cases, but are very commonly employed at the show of a little blood that would cease flowing if the part were freed of constrictions, were elevated and the wound subjected to the moderate pressure of a snug dressing. The tourniquet may be a source of grave danger. The dressing must not be too snugly applied in the hemorrhage checking efforts. After the battle of Santiago I had to remove the arm of a Spaniard at the shoulder-joint for gangrene following a dressing too tightly applied by a Spanish surgeon in his efforts to check the ooze of a shell wound near the elbow-joint.

To prevent infection I have devised a dressing which I have called a shell wound packet. This can be made on board ship, sterilized there, and is only to be prepared in quantities when likely to be needed in actual warfare. At other times the hospital corps men should be drilled in making and using the dressing, and in turn the ship's company can be instructed in its application. Some blood may ooze through the applied packet still this dressing should protect the wound from infection. It is to be replaced by a permanent dressing at the earliest opportunity.

The medical department of ships should be liberally supplied with No. 16 galvanized iron wire gauze in the rolls of the shops, cotton and unbleached muslin. The shell wound packets are made as follows: a piece of the wire is shaped into a parallelogram 8 inches by 6; 4 feet of the gauze is cut off the roll, is folded lengthwise and is securely stitched to one 8 inch side of the wire form. The wire frame is filled with cotton in the form of a compress and the gauze is folded over it and is stitched to the frame for security. The remainder of the fold of gauze, still attached, is snugly wound about the rigid compress. A piece of unbleached muslin 4 feet long, and 9 inches wide is then stitched to the free

end of the gauze and it, too, is made to encircle the form. Its free end is nicked with the scissors at several points so that the whole dressing may be easily secured by splitting and tying the muslin. Three safety pins fix the muslin at the sides and end.

A convenient disposition of these packets, after baking them just short of charring, is to place a dozen of them in a muslin bag with a purse string arrangement at its opening and to subject the bag with its contents to a baking as well. These bags of packets should be hung up out of the way but near the guns ready for use.

The points in favor of this type of packet are: cheapness; ease of application to the trunk, head and extremities; that it can be readily made on board ship; will keep its shape when applied to deep wounds and will not infold and buckle; will afford protection to extensive wounds and can be applied and secured by a novice. It can be made to encircle the trunk twice.

The wire gives the packet form, prevents it from infolding, permits it to be shaped to a part and very greatly simplifies the making of the dressing and its application. The muslin adds materially to the protection afforded the wound, gives support and serves the purposes of a many tailed bandage.

The immobilization of broken bones and otherwise injured parts. This can best be effected by the use of sand-bags. Sand-bags in surgery are almost as old as surgery itself but sand-bags to splint broken bones where the men fight the guns, is as far as I know a new application of a seasoned measure. The bags, which are best made of heavy unbleached muslin or light canvas, and not too well filled, should be at least two feet long,—longer than the femur,—and five inches in diameter. They should be baked thoroughly at least once. The sand-bags can be manufactured on board ship, or better the empty bags could be made a part of the equipment of the medical department to be filled as needed. They should be hung up or stowed near the guns before going into action.

The treatment of shock in accessible parts of the ship will be restricted to stimulants, liquid food and water. Dilute aromatic spirits of ammonia is the stimulant I would recommend.

Splinting broken bones, in severe injuries, materially shortens the period of shock. -

Before going into action all hands should bathe if possible, should put on clean outer garments and underclothes, and should leave off all unnecessary articles of clothing.

Let us see what we have provided for the wounded thus far. Should one of our men receive a wound of the thigh involving the femur, a shell wound packet will be promptly applied by a nearby comrade, the man carefully carried to a point out of the way of the rest of the gun's crew, there to lie on deck with his thigh between sand-bags until the action is over. Stimulants and other liquids will be given him as needed.



Applying the Shell Wound Packet.



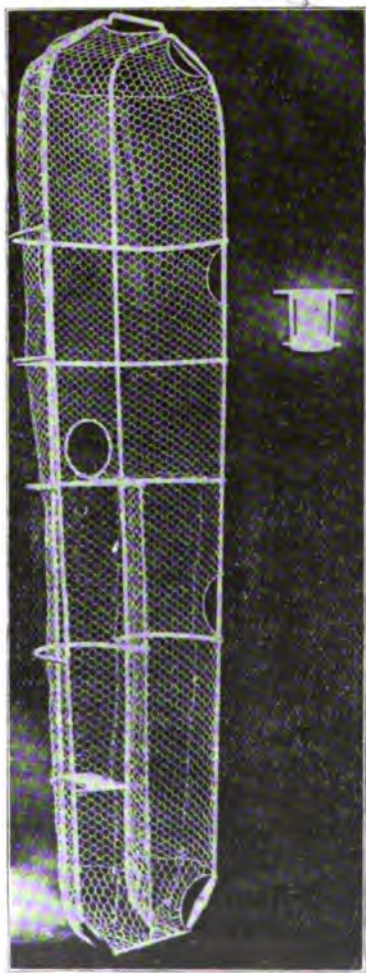
Shell Wound Packet Applied.

It appears to me that we shall be doing a lot for our men in these difficult situations if we succeed in carrying out this plan of treatment.

The transport of the wounded to the surgeons' dressing and operating stations has engaged the attention of military surgeons the world over and since writing this paper I have learned that Suzuki, a Japanese surgeon, has stated that in his opinion the ideal naval stretcher has yet to be devised.

If we were given our choice of splints for temporary use in a case of compound frac-

ture of the leg we should probably select a posterior wire mesh splint especially if the injury were near the knee-joint. Should



The Splint Stretcher showing foot piece.
The axillary and pelvic bands not shown.

we have a thigh to deal with, we would aim to fix the hip, knee and foot, and to support the fragments. The device, which I have called the splint stretcher, and now show you, will meet all of these indications, and while in it the patient can be up-ended, carried on side, or slid about decks and down ladders with comfort and security. Parts already splinted can be further secured in it as well. The pliable mesh can be shaped into the injured part and there fixed by bandages passed through the mesh at any point, or through chains conveniently placed for the purpose.

In this apparatus the wounded should be carried to the surgeon's operating quarters, there to be transferred to hammocks spread on deck. At this point the sandbags should again be employed for immobilizing the parts while the wounded are awaiting treatment of a more permanent nature at the hands of the surgeon. The medical

officers at this time will in all probability be overwhelmed with work, and time and labor saving devices such as skillfully administered spinal anesthesia will be greatly in demand.

If there are many wounded the surgeons will be short handed, and asepsis will be next to impossible. Anything beyond the checking of hemorrhage, the prevention of septic infection, the splinting of fractures for transport, and the treatment of shock, is positively contraindicated in the presence of a hospital ship. No matter how well trained and how well equipped the surgeons may be, it is practically impossible for them to do more than what I have designated and to do it well. The surroundings in a fighting ship after a battle are not conducive to painstaking careful surgical work. The ship, too, should be cleared of wounded as promptly as is consistent with their safety and welfare, as she may again be called upon to engage in battle.

When there is no hospital ship at hand of course the case is quite different. The conditions must be met as best they can. The new battleships are provided with well equipped operating rooms but these will scarcely be equal to the demands of a big battle; still they will be of inestimable value, and in peace times will be instrumental in saving many lives.

Practically all the surgical work done on board the fighting ships off Santiago had to be done over again on board the *Solace*. A properly equipped hospital ship should be and can be made as complete in every detail as the best equipped hospital on shore. The surgical work should be done there, where the surroundings conduce to asepsis. There was no pus on the *Solace* except in the cases of the shell wounds, which had been handled before they came on board with an energy more active than commendable.

The transfer of the wounded to the hospital ships should be accomplished by the drilled crew of that ship. The hospital ships should be equipped with the necessary transferring apparatus and all the required accessories. The medical officers of that ship, with their boats, and transferring devices, are the counterpart of the ambulance parties in the field.

The transfer will have to be accomplished in one of two ways; first, by small boats; second, by means of a trolley scheme direct from ship to ship. The hospital ships should be amply equipped with powerful steam launches and large seaworthy

boats provided with canopies for the protection of the wounded and built with flush decks, or platforms, below the rail.

The wounded that are able to walk should leave the ship in the ordinary ship's boats, while some of the stretcher cases should be placed in the boats provided with canopied platforms to be towed to the hospital ship by steam launches.

While assisting in planning the equipment of the Ambulance Ship Solace, before the war with Spain, I fully appreciated the tediousness and difficulties incident to a transfer of wounded from one ship to another by means of small boats. Let us consider the time required to put say 12 men over the side, on ordinary litters, by means of the usual ship's equipment. It will average nearly five minutes to a man, which means that it will take nearly an hour to get 12 men into boats alongside, and practically as long to tow them to the hospital ship and get them aboard.

To supplement the method of using boats and to expedite the transfer, in April 1898, I devised an apparatus which consists roughly of a steel hawser made fast to the fighting ship, a weight let over the side of the hospital ship sufficiently in excess of the weight of the hawser, the patient and the transferring car, to keep the line taut and clear of the water while effecting the transfer. This type of apparatus can be used in any seaway in which the guns can be fought, and the ships, while the transfer is being accomplished, lie dead in the water. The splint stretcher can be used as a transferring car. This apparatus differs from all coaling devices that I have seen and suits the purpose better than any that I know of. The type of coaling device which is in favor at present is one, in which, the transferring line is kept taut by means of sea anchors, and automatic winches, while the fighting ship tows the collier at a moderate speed. There are many objections to this form of apparatus as adapted to the transfer of the wounded; among them may be mentioned the fact that the fighting ship must get under way after a battle, and that, while under way, the transfer by small boats cannot be effected. The apparatus is complicated and expensive.

Some time after the digest of this paper was transmitted to the Secretary of the Association for publication, and at about the

time of its publication, there appeared in the British Medical Journal a paper by S. Suzuki, Deputy Inspector General, Imperial Japanese Navy. Senior Medical officer with Admiral Togo. Dr. Suzuki's paper deals with the size of the first aid packet, and strongly urges that warships are not suitable places for the practice of surgical procedures beyond the preparation of the patients for transport to hospital ships. He says that the ideal litter for ship's use has yet to be devised. I feel that we have approached it in the splint stretcher. I regret that splinting with sand-bags has not been given a trial under the conditions of war, for I believe it to be an ideal method of temporary splinting, one that can be satisfactorily employed by a novice in surgery, and one destined to relieve pain, in many cases, and thus aid in the recovery from shock.

DISCUSSION.

MAJOR L. L. SEAMAN: I merely wish to compliment the essayist upon his excellent paper, and to say that it is a serious proposition to sling or transfer wounded over the side of a ship. However, the Japanese have to some extent solved this problem in their hospital ships by having a large port near the water line. Every one of their ships is constructed in this manner and it is open almost to the water line. They do not let the wounded down, but they pass them out through this port. It is an immense advantage when ships are loaded with only wounded.

ASST. SURG. GEN. GEO. TULLY VAUGHAN, P.H. & M.H.S.: I simply wish to say a few words in regard to the splint which has been shown. I also want to congratulate Surgeon Stokes on the first aid bandage he has devised for shell wounds. I have had no experience with shell wounds, but I have had a good many wounds in civil practice where the injuries were very similar to those made by shells. In regard to the splint, I have no doubt this is the best splint for handling the wounded on board ship that has been devised. However, that is for my friends of the navy to decide—this is only my opinion. I think it also has a useful field in civil life. A man placed in that splint may, with a fracture of the femur, with the bandages properly applied, be moved or suspended anywhere with perfect comfort. What is usually used for the transportation of men with fracture of the femur is the old cloth or canvas litter with long side splint and a certain amount of pain is inevitable but by means of the splint here shown I believe that feature would be done away with. It might be a little difficult to get the patient out of the splint, and I would like to ask the inventor if it could not be arranged with hinges so it might be opened and closed again without injuring its efficiency.

SURGEON H. G. BEYER, U.S.N.: I am very glad that Dr. Stokes has brought up this question of first aid to the injured on board ship and moving them about until they arrive on the hospital ship. Until we have sufficient experience, which can be gained by experimentation on board of almost any ship, until we have sufficient experience in moving our sick and wounded from one ship to another, from the fighting ship to the hospital ship, I do not think we have done the best thing for the injured in war so far as preparedness is concerned. This is a very vital point. We should have concise methods and objects and conceptions of what we are going to do when we have a ship full of wounded. I do not think, according to my experience, that we have anything fixed at all or made any great observations or experiments on that very subject, and yet it is one of the first things we would be called upon to do in actual warfare. As Dr. Stokes has very well said, I do not think that during a fight a battleship can be considered as anything else, and from a medical point of view the only thing that can be done is to attend to first aid, treat the wounds aseptically, attend to the hemorrhage and assist in getting them as quickly as possible on board the hospital ship. I think experimentation on this suggestion as regards the trolley method for transportation from the battle ship to the hospital ship is an idea worth following up by practical test and drills approaching the conditions prevailing during war.

LIEUT. COL. JOHN V. R. HOFF, U.S.A.: One point suggests itself as I look at the Stokes splint litter, the possibility that it might take up too much room on board ship where every inch counts, and the suggestion of Dr. Vaughan that it be hinged or made to nest in some way (which the inventor has provided for) might be of advantage. As a ship litter it seems an ideal conception, but it would not be suitable for field service.

MAJ. S. C. MILLIGAN, N.G. Pa.: I believe it would be benefited by being made about half as deep as it is now. I believe it could be handled better and the men could be lifted in and out more easily.

THE PRESIDENT: I simply want to remark that this matter has engaged my attention for some time, very particularly the method of transferring the wounded. The need of carrying wounded men through circuitous passages, and varying angles, when the means of communication are extremely difficult and the necessity for something more practical, has brought about the construction of this device. I have not had experience with this splint, but the suggestion in regard to the space it occupies is a very important one. We take, for instance, an ordinary cruiser having a broadside of six guns, I feel that a half dozen of these splints would be necessary for the transportation of the wounded. What I like about this is that you can carry a man perpendicularly, or horizontally, and he is immobile, and that is a very material point, and in that respect it is the best device I have yet seen. The fact that it is made from material that does not splinter is important. I have always deprecated the possibility of suspending the wounded in action,

and I think most men have given up the idea that such a thing is a possibility. A very important point is how to send the wounded up and down the hatches, I think this device can be easily handled by a man above and below. These are the most important features presented to my mind in regard to this splint.

SURGEON CHARLES F. STOKES, U.S.N.: In regard to using side ports in getting wounded men from the fighting ship to the hospital ship, that is only possible in quiet water. At sea small boats could not approach near enough; we would have to put the men over the side. Any scheme of hinges I have been able to get hold of would weaken the device (the splint stretcher), and that would affect one of its most important points which is rigidity. This is the smallest one of the splint stretchers; they nest perfectly so that the height of the three is about two or two and one-half inches higher, and about two inches longer than the one that is shown here. They are arranged in sets of three, so three of them occupy about as much space as three or four stretchers would. The cost is \$20 each where a number are ordered made. The Kny-Scheerer Company has made mine for me. They are expensive, but they have to be made of good material and properly made, otherwise they are worthless. In regard to the question of depth, I have found it of advantage in affording protection and a sense of security to the wounded—which are very important matters,—and it does not add materially to the space. It affords protection to the man in taking him down ladders, through hatches and narrow passage ways.

LIEUT. COL. HOFF: How do you get them up?

SURGEON STOKES: The same as we get them up from an ordinary stretcher. I have thought of putting in a temporary device of unbleached muslin to be used as a sling to lift an injured part in and out with. A man can be treated in this stretcher, the injured parts can be dressed, and the irrigations will go right through. In my opinion the splint stretchers are particularly adapted to the treatment and transport of the seriously wounded in the field. A compound fracture can be treated in this apparatus from the firing line to the base hospital, in ambulances, trains, and hospital ships. The makeshift litters and improvised splints are, as a rule, surgical barbarisms.

THE ARMY MEDICAL SERVICE OF RUSSIA.

By COLONEL FRANK HOWARD, M.D.,

ARMY MEDICAL STAFF (R.P.); SENIOR MEDICAL OFFICER,
RECRUITING, LONDON DISTRICT.

THE Secretary of the Association of Military Surgeons of the United States having requested me to write a paper on the above service, I am glad to place at the disposal of the members of my profession such information as I possess on this subject; but before doing so I desire to state that my object is to be to amplify the somewhat abbreviated details on the Russian Army medical arrangements contained in my "Hand-book on the Medical Organizations (chiefly for war) of Foreign Armies," rather than to rewrite the information that appears therein.

The Russian Army Medical Service although organized on much the same principles as the medical services of other great military powers differs from them in the essential respect that the direction of the sanitary service is maintained subdivisionally in two parallel branches—that is to say the military authority not only considers the army medical officer as an auxiliary who, ought always to be subordinate to it, but yet denies him every administrative quality, and employs him only as a sanitary expert. The medical inquiry which followed the war in the Balkans seems to have taken place with the systematic exclusion of medical men from the administrative questions raised, and to have caused disappointment as their counsels were not always listened to especially in the rear zone distant from directing authority, and the often painful results of an incompetent hospital administration were attributed by their authors to medical officers whose advice they neglected.

RECRUITMENT.

Before being appointed a surgeon in the Army a medical student must have finished his studies in medicine, surgery and

the other sciences at one of the seven universities of Moscow, St. Petersburg, Juriev (Dorpat), Kiev, Kharkov, Kazan or Helsingfors or at the Military Medical Academy of St. Petersburg. At the end he may pass two examinations—the surgeon's or the physician's. The former gives him the 9th class of the "tchin" or, "chin" i.e. the general hierarchy of the Empire, the latter the 8th, and the latter is necessary before he has free right of practice in the Empire, or before he can be promoted in the Army. All civil practitioners belong to the reserve with liability to call for service in time of war up to the limits of age imposed by the law of military service.

CLASSIFICATION OF MEDICAL OFFICERS.

The medical officials of the Russian Army have no military rank whatever, being classed as civil officials of the War Ministry. They are given rank in the "Chin" according to the positions which they hold, but may hold a position a grade higher than that attributed to their rank, and are generally shortly given the necessary rank. The pay, however, is given according to the position held. With the consent of his superiors, a medical official can hold other appointments besides his military one, even under other ministries.

PAY.

The total varies, within the following limits, in francs:

Sub-Lieutenant.....	1,900 to 2,425
Lieutenant.....	2,100 to 2,585
Captain.....	3,000 to 4,425
Major.....	7,000 to 9,175
Colonel.....	11,000 to 12,535
General of Brigade (Brigadier General).....	12,000 to 13,865
General of Division.....	17,000 to 20,000

Rank.	Pay in Roubles.	Table money in Roubles.
Surg. Gen. of the Army.....	846	498
Corps Surg. of Guard Corps.....	663	369
Corps Surgeon.....	570	276
Division Surgeon.....	507	222
Senior Surgeon.....	414	165
Junior Surgeon.....	333	129

The allowances are much the same as for officers.

RETIREMENT. ♣

The retirement of Lieutenants takes place at 53 years of age; Captains at 55; Majors at 58; medical men of a higher grade, not inspectors, at 60. The pension of retirement amounts, after 20 years service, to the half of the pay of the preceding grade, and after 30 years, to the total, independently of a certain sum paid by a special retirement bank (fund) to which medical officers contribute six per cent. of their emoluments.

Medical officials belong to the following ranks of the "Chin" : 3d or 4th class, Surgeon Generals of the Army, and Director of the Medical Department of the War Ministry, correspond to Major General or Lieutenant General and carry the title of "Actual State Councillor" or "Privy Councillor," with the predicate of "Excellency and the title of nobility. 4th and 5th class, Corps Surgeon of the Guard Corps, principal Surgeons of military educational establishments and of hospitals of the 4th class, correspond to rank of Major General and carry titles of "State Councillor" or "Actual State Councillor." Those of the 4th class have the predicate of Excellency and are ennobled. 5th or 6th class, Corps Surgeons and principal Surgeons of hospitals of the 2nd or 3rd class, correspond to rank of Colonel, and carry titles of "College Councillor" or "State Councillor." 6th or 7th class, Divisional Surgeons, principal surgeons of hospitals of the 1st class, and assistants to principal Surgeons of those of the 3rd and 4th class, correspond to rank of Lieutenant Colonel or Colonel and carry titles of "Court Councillor" or "College Councillor." 7th or 8th class, Senior Surgeons with Units, and senior ordinators in hospitals, correspond to rank of Lieutenant Colonel and carry titles of "College Assessor" or "Court Councillor." 9th class, Junior Surgeons with Units, and junior ordinators in hospitals, corresponds to rank of Captain, and carries title of "Titular Councillor" Promoted after four years to the 8th class. In official documents when a medical officer is designated the indication of rank in the "Chin" is always given, *e. g.* "The medical officer of division, of the 9th division, College Councillor Doctor X." Another medical officer although filling the same post can

have in the "Chin" a higher rank and be entitled "State Councilor, Doctor Z."

REGIMENTAL MEDICAL OFFICIALS.

A regiment of Infantry in Russia consists of 4 battalions, of 4 companies each. Its establishment is as given on page 142 of my Handbook (*JOURNAL*, page 325) except that 1 Junior Surgeon is given instead of 4 as stated. The various units of the army are provided with medical officials permanently attached to them on the following scale: One Senior Surgeon for the regiment, and one Junior Surgeon for each battalion in an infantry regiment. One Senior and one Junior Surgeon for an independent battalion. One Senior and one Junior Surgeon for a cavalry regiment, and one Senior and one Junior Surgeon for an artillery brigade. The Senior Surgeon is responsible for the proper performance of the medical service of the entire regiment. With the permission of the regimental commander he visits the men's quarters, inspects the men, and prescribes all hygienic and other measures as are necessary owing to climate, etc. The Senior Surgeon has under his orders the battalion surgeons, dressers, apothecary assistants, hospital sergeants and hospital orderlies. He is subject in all matters of duty, etc., to the regimental commanding officer, but in exclusively medical matters to the divisional surgeon. His powers are equal to those of a battalion commander. The Junior Surgeons in a regiment are only attached to battalions when those are detached; at other times they remain on the regimental staff at the disposal of the Senior Surgeon.

SUBORDINATE MEDICAL PERSONNEL.

Consists of dressers and hospital sergeants, who have the rank and privileges of under officers, and of hospital orderlies. They are derived from two sources, the dressers' school, and from soldiers who have been trained in the various medical establishments. There are dresser schools at St. Petersburg, Moscow and Kiev, whose pupils, who must first have passed through a progymnasium (middle class school), are put through a three years course of training and then pass an examination. Their practical

training is afterwards completed in the military hospitals. They are appointed as dressers to units. The soldiers who are trained in the medical establishments must first have served at least one year in the ranks, and are then appointed dresser pupils, and a thorough course of instruction for three years in a hospital; specially proficient men are permitted to pass their examination as dresser at the end of their second year. They are then appointed dressers, either in the actual army or, more usually, in the reserve. Dressers are divided into senior dressers, junior dressers, apothecary dressers, company (squadron or battery) dressers, and dresser pupils. For the regimental and other hospitals there are provided in addition, hospital sergeants (overseers or heads of wards), and hospital orderlies (ward servants).

The following is the distribution of the subordinate personnel to the principal units:—Infantry regiment, 1 senior and 1 apothecary dresser, 14 dresser pupils (distributed as required), 1 hospital sergeant, and 3 hospital orderlies on the regimental staff; 1 junior dresser per battalion and 1 dresser for every two companies. Independent battalion, 1 senior, 1 junior, and 4 company dressers, 4 dresser pupils, 1 hospital sergeant and two hospital orderlies. Cavalry regiment, 1 senior, 1 junior and 1 apothecary dresser, 1 hospital sergeant, and 2 hospital orderlies on the regimental staff, and 1 dresser and 1 dresser pupil per squadron. Artillery brigade, 2 senior, 6 junior and 1 apothecary dressers and 1 hospital sergeant on the brigade staff; 1 junior dresser for two batteries, and 1 dresser pupil and 1 hospital orderly for a battery.

MEDICAL ESTABLISHMENTS.

Comprise regimental hospitals, permanent military hospitals, local hospitals, special hospitals, and medical store depots. All units have in their possession the necessary material and rooms for the formation of a regimental hospital on the following scale:—Infantry regiment 16 beds; independent battalion 4 beds; cavalry regiment (2 per squadron) 12 beds; field battery 2 beds; horse battery 3 beds; sapper battalion 4 beds; pontoon battalion 3 beds.

These hospitals are formed in peace, either on the order of the unit commander, where there may be no hospital in the place

where the unit is stationed, or by order of the principal surgeon of the district when the other hospitals may be full. All units have always reception rooms for rendering first aid to the sick, equipped with 4 beds for an infantry battalion, 2 beds for a squadron, 2 beds for a field battery, and 3 beds for a horse battery. Certain regiments of the guard have their own hospitals with the following establishment of beds:—Finland regiment 200 beds; Moscow 125; horse guards 100. The senior surgeon of the unit is the medical, and the commander of the unit the military chief of the medical establishments belonging to the regiment. Soldiers of other regiments, and, in special cases, soldiers of the reserve, may be treated in these hospitals.

PERMANENT MILITARY HOSPITALS.

I have not alluded to these hospitals in my Handbook. These permanent or stationary hospitals are divided, in Russia, into four classes and are distributed amongst the various districts. Hospitals of the 1st class contain 5 beds for officers, and 150 for non-commissioned ranks, with a reserve of two for the former and 50 for the latter. Hospitals of the 2nd class contain 10 beds for officers, and 300 for non-commissioned ranks, with a reserve of 5 for the former and at least 100 for the latter. Hospitals of the 3rd class contain 33 beds for officers and 500 for non-commissioned ranks, with a reserve of 15 beds for officers and 150 for other ranks. Finally, hospitals, of the 4th class contain 38 beds for officers and at least 800 for non-commissioned officers and men, with a reserve of 20 beds for officers and at least 300 for the non-commissioned ranks. In some of the permanent hospitals there are special wards with female attendants for the wives and families of soldiers. If it becomes necessary to have a medical establishment of less than 150 beds, either a half hospital or a section is formed; the former when its distance from the nearest permanent hospital is so great that a special administration is necessary, the latter when the administration can be carried out by a permanent hospital. The following table gives the personnel of the hospitals of the four classes:

	1st Class	2nd Class	3rd Class	4th Class
Commandant	1	1	1	1
Medical Staff:				
Principal Surgeon.....	1	1	1	1
Consulting Physicians.....	0	0	2	2
Other Surgeons.....	3	6	7	15
Apothecary.....	1	1	1	1
Other Officials.....	1	1	3	3
Medical Dressers.....	6	10	15	26
Apothecary's Assistants.....	2	3	5	7
Administrative Staff:				
Superintendent.....	1	1	1	1
Officer in Disciplinary Charge	0	0	0	1
Stewards	1	1	2	3
Bookkeepers.....	1	1	1	1
Head Clerk.....	0	0	0	1
Clerks.....	6	8	10	12
Chaplain	0	1	1	1
Sacristan.....	0	1	1	1
Ward Service:				
Sergeant Major.....	1	1	1	1
N. C. O. in charge of clothing of sick.....	1	1	1	1
Quartermaster Sergeant.....	1	1	1	1
N. C. O. in charge of laundry	1	1	1	1
Watchman.....	0	0	0	1
Heads of wards.....	2	4	6	11
Ward Servants.....	14	27	43	72
Cooks, orderlies, servants, fa- tigue men.....	50	70	88	132

The commandant is responsible for discipline and the maintenance of order in the hospital. The principal surgeon superintends the medical treatment of patients, sanitary duties and everything relating to the care of the sick, the surgeons, apothecaries and dressers employed in the hospitals carrying out his orders. The principal surgeon only in exceptional cases prescribes; he, however, takes part in all consultations and superintends the surgeons in the performance of their duties. A sanitary committee attends to the financial matters, and is comprised of all the surgeons and officials belonging to the hospital. The principal surgeon is president of it. It audits all accounts, and has authority to make purchases to the amount of 100 roubles. Purchases amounting to 500 roubles can be made only with the consent of the Inspector General of the hospital, who is either the military chief of the government or a General of the garrison. The hos-

pitals are divided into wards according to the nature of the maladies of the inmates. The Senior Surgeon of each ward is called the ordinator and is personally responsible for the proper treatment and care of the sick under his charge. A dispensary is attached to each garrison hospital. During the summer months the sick are placed in tents or huts to allow of the hospitals being thoroughly cleaned and ventilated. The nursing service is carried out either by hired nurses or by men told off by the officer in command of local troops. On the 1st October 1893 the number of permanent hospitals was 16 in Europe, 6 in the Caucasus, and 6 in Asia.

LOCAL HOSPITALS.

These exist in places where only reserve or local troops are stationed and may contain up to 350 beds. On the 1st October 1893 there were 71 of them in Europe, 28 in the Caucasus, and 68 in Asia. Their organization is similar to that of the permanent hospitals and their establishment as follows:

	50 beds to 350 beds.	
Principal Surgeon.....	1	1
Other Surgeons.....	1	to 6
Head Apothecary	0	to 1
Assistant Apothecaries.....	1	to 3
Dressers.....	2	to 8
Hospital Steward.....	1	1
Clerks.....	2	to 5
Wardmasters.....	2	to 7
Cooks, Bakers, etc.....	3	to 15
Ward Servants.....	1	to 8 sick
Drivers, according to number of vehicles.		

In addition to the above there are asylums for military lunatics at St. Petersburg, Moscow, Warsaw and Kiev, a military clinical hospital at St. Petersburg, the Michael Clinical Infirmary at St. Petersburg, and the Chesma and Ismailov military almshouses.

MEDICAL STORE DEPOTS.

The dispensaries of military hospitals receive supplies of medical stores, bandages etc. from these depôts. The central one is at St. Petersburg, and local ones are established at Bobruisk, Kiev, Brest-Litovsk, Moscow, Kazan, Kremenchug, Tashkend,

Omsk, Irkutsk, Khabarovka, Tiflis, and Stavropol, each of which has a small staff of apothecaries, surgical instrument makers, dressers, and clerks. Surgical instruments are supplied to all these from a government manufactory at St. Petersburg. At Tiflis there is a medical laboratory where experiments are conducted and medical officers are instructed in hygiene.

THE WAR MINISTRY.

The Medical Department forms one of the several departments of the establishment of the War Ministry. The Surgeon Inspector General has an assistant, 2 medical officers for special duties, and a consulting professor for eye diseases. The following are the sections and personnel:—Chancery 4 officials; 1st section, 1 surgeon as chief, 5 surgeons or officials, heads of sub-sections, 3 officials; 2nd section, 1 surgeon as chief, 2 surgeons, heads of sub-sections, 2 officials; 3rd section, 1 surgeon as chief, 3 chief officials, 7 officials; mobilization branch, 2 surgeons, 1 official; sanitary statistical branch, 1 surgeon, 3 officials, and lastly, subordinate personnel, 1 official, 42 clerks, 6 dressers, 2 apothecary dressers, 4 couriers.

The summary of the medical establishment (according to returns in November 1893) of the war ministry may be placed approximately as 59 officials, and 54 N.C.O's. and men (non-combatants). The veterinary service was comprised in the medical establishment; but in virtue of an order of November 19, 1902, this service ceases to be placed under military medical authority from this year and becomes directed at the ministry by a veterinary chief Inspector of a new division of veterinary medicine; in the military districts by a district veterinary surgeon, and in the Army Corps by a veterinary officer of the Army Corps.

The army medical department of the war ministry is the highest medical and sanitary authority and has entire control over the personnel. A Scientific Medical Committee is attached to this department.

To each army corps and division staffs is attached a corps or divisional surgeon. The army corps surgeon has supreme charge of all medical arrangements in the corps. He is placed under the direct orders of the Army Corps Commander, and, for purely

medical matters, of the medical inspector of the district. His powers over the medical personnel are equal to those of an officer commanding a brigade. Similarly the medical responsibility passes on to the surgeons of divisions and brigades under their commanders.

Having thus given at some length a survey of the peace arrangements I pass on to the the Medical Service in the Field.

MEDICAL SERVICE IN THE FIELD.

The medical formations in the field are given in my handbook of the "Medical Organizations of Foreign Armies;" the chapter on Russia having been already reprinted in the the October number of the JOURNAL OF THE ASSOCIATION OF MILITARY SURGEONS OF THE UNITED STATES it therefore only remains to give somewhat fuller information regarding the duties of the several ranks.

The chief of the medical service with an army in the field is the Adjutant General of that army who exercises his functions as regards the medical and sanitary service through three subordinate heads of departments, viz., the Inspector of Field Hospitals, the Medical Inspector, and the Plenipotentiary of the Red Cross. A Major General is appointed as Inspector of Field Hospitals of the army whose functions comprise the inspection of all permanent and temporary hospitals. His staff comprises 9 officials, 9 clerks, 1 private for general duties, 15 servants, (3 for the inspector, 2 for each of the higher officials, 1 for each of the rest), 1 transport under officer and 5 drivers with 4 2-horse wagons (3 for baggage, 1 for clerks) and 10 horses (1 spare, 1 riding). A reserve of officials calculated at 5 per cent of the total number on the establishment is attached to this department. The Inspector of Field Hospitals' authority although extending over all the hospitals of the army both permanent and temporary does not exist over the sanitary establishment belonging to the troops, except the mobile hospitals attached to divisions when they are occupied by sick or wounded and cannot follow their divisions. He supervises the supply to all medical establishments of the hospital stores, instruments, and personnel required by them. A reserve of medical officers is placed at his disposal, and the chief of all local hospitals and the committees for the evacuation of the

sick are under his orders. He keeps up constant communication with the Medical Inspector of the army, the Plenipotentiary of the Red Cross Society for matters concerning the participation of this society in the case of sick and wounded, the chiefs of the lines of communication and road departments for the organization of the transport of the wounded, and the intendant of the army for the supply of provisions, etc., to medical establishments from the intendance magazines. He submits to the Adjutant General detailed plans for the measures to be taken to enlarge permanent hospitals, to provide extra mobile and reserve field hospitals, to distribute mobile hospitals and to provide hospital stores and supplies, to replenish or augment the personnel or form sanitary stations, detachments of weakly men, lines of communication hospitals or sanitary and sick trains on the railway, and finally measures for the evacuation of the sick and wounded in general, carrying those measures into execution after approval.

THE MEDICAL INSPECTOR OF THE ARMY.

The Field Medical Inspector of the army, an official of the 4th class of the "Chin," is allowed a staff of a chief surgeon, the surgeon attached for duty to army head quarters, 3 surgeons for special duties, 1 apothecary, 3 office officials, 4 dressers, 1 apothecary dresser, 8 clerks, 1 private for general duty, 22 servants, 1 transport under officer, and 11 drivers attached with 9 carriages (3 2-horsed wagons for baggage, and 2 for clerks and dressers, 2 1-horsed carts for apothecaries' stores, etc., 1 2-horsed wagon for medical stores, and 1 4-horsed ambulance) and 21 horses (1 riding, two spare) a reserve of 10 per cent of surgeons, 2 per cent of apothecaries and 5 per cent of dressers of the whole number on the establishment is provided and placed at the disposal of the Field Medical Inspector. His duties are to superintend all sanitary and medical-police measures for the preservation of the health of the troops, to watch over the treatment of the sick and wounded, and see that a proper selection is made of cases for evacuation, to take measures for the supply of medical stores to all medical establishments, and to supervise the medical personnel of the army. Under his orders are the Surgeon General of the Army, the surgeon in executive charge of army headquarters, and a reserve of medical personnel. The medical

inspectors of military districts of the theatre of war and the chief surgeons of corps are under his direction, although he does not interfere with the details of their work, and the field dispensaries are moved and distributed by him. He maintains close relations with the medical department at head quarters (Home), and refers to it all the measures he has taken, all the requirements of the medical service, and the sanitary conditions of the troops. He keeps up communication with the Inspector of Hospitals for affairs connected with the interior economy of the hospitals, with the Plenipotentiary of the Red Cross Society for matters concerning the medical activity of that Society, and with the medical inspectors of military districts for the treatment of the sick sent to the rear. He furnishes the Adjutant General with detailed statements of the requirements in stores, the special sanitary measures to be taken, and the selection of sick and wounded, from a medical point of view, for evacuation.

THE PLENIPOTENTIARY OF THE RED CROSS.

This personage is under the Adjutant General. No special staff is allowed for him, and his baggage is provided by the society. He has at his disposal all the resources in personnel, material, and money supplied by the Red Cross Society for the assistance of the sick and wounded in war. He keeps up close communication with the Inspector of Hospitals and the Medical Inspector and receives from them information as to how he can best offer assistance. He inspects all the establishments belonging to the Society, reporting as to their condition and contents to the Adjutant General, and informs the headquarters of the society at home of further requirements.

THE CHIEF SURGEON OF AN ARMY CORPS.

This medical officer is the adviser on sanitary matters of the corps commander, and takes all measures to preserve the health of the troops. He supervises the supply of medical etc. stores to medical establishments of the Corps and the disposal of medical stores that may be captured from the enemy. Before an action he takes measures for the concentration at dressing stations of a sufficiency of personnel and stores, and supervises their working and the removal of the sick to the hospitals designated for that purpose. He directs the operations of such portions of the Red Cross Society's establishments as are attached to the corps, and has

the right of transferring medical personnel or establishments from one unit to another if necessary.

CHIEF SURGEON OF A DIVISION.

This medical officer is the immediate head of all medical establishments attached to that division. While directly under the orders of the divisional commander, he carries out, in medical matters, the direction of the Chief Surgeon of the Corps. He selects the points at which Field Hospitals are to be located, and ensures their being emptied and made available again as soon as possible. He supervises the medical personnel, and takes measures to keep its personnel complete, frequently inspecting the hospitals and their accounts and books.

REGIMENTAL MEDICAL ARRANGEMENT.

The following tables, obtained from official and other sources will be found useful. Tables I and II from our own offices in 1902. III and IV from a source given at the heading.

TABLE I.

SURGEONS, DRESSERS, AMBULANCES, MEDICAL COMFORTS	In a horse battery or light rifle so called battery.....				
	In a Foot Artillery Brigade...	In a Cavalry Regt. (6 squad.) or Cossack Regt. 6 Sotnias.	In an Independent Rifle Bat- talion.....	In a Rifle Regiment of 2 bat- talions.....	In an Infantry Regiment of 4 Battalions.....
Surgeons.....	1	2	2	3	5
Dressers.....	2	7	9	6	11
Ambulances, 4 horse, each for 5 men, 4 lying, 1 sitting or 8 sitting.....	...	3	...	1	2
Ambulances, 2 horse, each for 2 lying or 4 sitt'g	1	...	2	...	...
Apothecary's 1 horse 2 wheel.....	1	2	1	1	2
Wagon, 2 horse, with stretchers, etc., for wound- ed too bad for bearers or stretchers.....	...	...	...	1	1
Sanitary, 2 wheel.....	...	1	...	...	...
Stretchers with mattresses for carrying wounded	2	12	6	8	16
Bearers; 4 for every litter except in Artillery Brigades, where there are 3 per stretcher, a gunner is told off for the fourth.....	6	36	24	32	64
<i>Medical Comforts.</i>					
Preserved Meats (rations).....	...	30	30	20	40
Preserved Soup (ration).....	...	30	30	20	40
Besides cranberry jam, tea, sugar, wine, spirits, &c	...	...	...	...	...

TABLE II.

ESTABLISHMENTS:	Division'l Hospital	Brigade Hospital, Rifle Brigade.	Field Mobile Hos- pital.	Field Reserve Hos pital.	Sanitary Transport	Fortress Temp- orary Hospital.
Surgeons.....	5	4	4	4	2	7
Dressers.....	5	5	9	9	4	16
Hospital Attendants.....	22	14	65	65	19	127
Sisters of Mercy.....	...	4	4	4	2	8
Bearer Company, 17 N. C. O. and 200 men.....	217	...	...	...	...	...
Bearer Command, 11 N. C. O. and 130 men.....	...	141	...	...	...	...
Ambulances for 4 lying, 1 sitting, or 8 sitting....	8	...	1	...	27	...
Pair horse ambulance.....	...	8	...	...	...	...
Pairs of tents for two.....	15	15	19	...	7	...
Hospital 2 bed tents.....	3	2	4	...	1	...
Tents for four.....	1	...	1	...	1	...
Stretchers with mattresses.....	50	40	40	2	...	...
Big tents.....	4	...	3	1	1	...
Small tents.....	...	5	...	...	...	...
Portions preserved meat or rations.....	400	384	...	384	400	...

TABLE III.

Tables III. and IV. are taken from an article by Principal Medical Officer, 1st Class, Professor F. Antony (Val de Grâce) in the "Archives de Medecine et de Pharmacie Militaire for February, 1903.

	Feldschers	Hosp. Orderlies	Stretch. B'rs	Beds in Hosp
	Peace—War	Peace—War	Peace—War	
Infantry Regt.	22.....22	4.....7	64.....128	84
Batl. of Schultzen	6..... 6	3.....3	16..... 32	28
Cavalry Regiment	9..... 9	3.....3	24..... 48	30
Brig. of Artillery	7..... 7	1.....1	24..... 48	48

According to the gravity of their condition sick soldiers are cared for in rest rooms, in infirmaries (okolotki), in in troop hospitals, or in permanent hospitals.

**PERSONNEL AND MATERIEL OF THE SANITARY SERVICE
AT THE FRONT.**

OFFICERS AND TITLES.		Regt. of Infantry, 4 Battalions.	Regt. of Cavalry, 6 Squadrons.	Brigade of Artillery 6 Batt's of 8 guns	Divisional Lazaret	Mobile Hospital	Sanitary Convoy
Officers.....	...	...	...	...	2	1	1
Medical Officers.....	5	2	2	5	4	2	2
Employees (clerks).....	...	...	...	...	4	1	1
Feldschers.....	22	6	7	5	9	4	4
Hospital Orderlies.....	7	1	22	65	19	...	...
Stretcher Bearers.....	128	24	36	217	...	...	...
Train Servants.....	...	...	...	40	33	73	...
Stretchers.....	32	6	12	50	40	...	...
Tents (20 men).....	...	...	...	4	3	1	...
Wheeled Transport	For Wounded.....	4	2	3	8	...	27
	Pharmacy.....	4	1	2	3	4	1
	Administration.....	1	1	1	18	25	8
Horses.....	...	...	...	82	67	137	...
Rations.....	80	30	30	200	200	384	...

To sum up the general organization of the Army in the Field we may say that it is divided into a certain number of armies under the commanders of armies (*Komanduyuschii Armii*). Directly under the chief of the staff of the Army are the three departments of the (a) Quarter Master General of the Army (b) Adjutant General of the Army and (c) General of Communications of the Army; and directly under the Commander of the Army are the departments of the (a) Intendant of the Army (b) Inspector of Artillery of the Army (c) Inspector of Engineers of the Army (d) Chief Field Paymaster (e) Chief Field Controller. The foregoing are the eight principal departments, but there are also the following secondary departments and officers or officials. Under the Chief of the Staff the Chancery of the Staff of the Army. Under the Adjutant General, (a) the Field Hospital Administration, (b) the Field Medical Administration, (c) the Plenipotentiary of the Red Cross Society, (d) the Judge

Advocate General of the Army, (e) the Commandant at Head Quarters, (f) the Chaplain General at Head Quarters.

Under the General of Communications are the Department of the Lines of Communication, the Road Department, the Postal and Telegraph Department, and the Transport Department.

RED CROSS.

So many articles have recently appeared in medical and foreign Journals on the Red Cross Society of Russia, its resources etc. etc. that it seems needless to say anything on this subject here.

SANITARY CHANCERY.

A few lines will be sufficient to deal with this section of the army in the field. It is under a Colonel and is divided into two (a) the sanitary and (b) the evacuation sections at the head of each of which is an official with another as assistant. For general duty there are also 2 officials, 1 surgeon and 8 clerks. The sanitary section attends to measures for preserving the health of the troops, and to the composition, distribution, and supply of the medical units and establishments; the evacuation section to the measures to be taken for the evacuation of sick and wounded.

In conclusion I have to offer my thanks to the Intelligence branch of our army for much help given to me, and I would strongly urge medical officers who desire to obtain a good grasp of the subject of Russian Army medical organization to read the supply book by Professor Theodore Maksheiff, an able article in the "Archives de Médecine et de Pharmacie Militaire" of February 1903, by Principal Medical Officer 1st Class, Frederic Antony, Professor at Val de Grâce; and also the Appendix, page 367, to Medico-Mayor Dr. José Gamero Gomez's translation of my Handbook on "The Medical Organizations (chiefly for war) of Foreign Armies" recently published at Madrid (Imprenta de administracion militar 1904).

EMERGENCY ENTEROSTOMY FOR BULLET WOUNDS.

A MEDICAL officer of Brabant's Horse (*Scottish M. & S. Jour.*) reports that, "After a tough fight, I discovered a wounded native crawling toward a pool of water near at hand. His wound was fearful. The abdomen was ripped open right across by a Snider bullet, his entrails protruding, one of the small intestines severed, the two ends trailing on the grass as he crawled along. My medicine chest, carried in my pocket, consisted of some pins and needles, white thread, a pair of sharp scissors and a two-bladed knife, one of the blades kept always very sharp. I turned the poor chap on his back, brought him water in my helmet, and began to do for him what I could. The puzzle was how to unite the severed intestine. Now, close at hand, growing out of the pool of water I spoke of, were a number of Spanish reeds. These reeds are a kind of exaggerated grass an inch in diameter when full grown, resembling the canoe in so far that there are 'knots' or joints every nine inches about. I chose one of these just coming out, and therefore quite soft and pulpy, half an inch in diameter; I cut a length two inches and a half with a 'knot' at the middle to keep it strong enough to bear fair pressure. With my sharp knife I fashioned it slanting inward, so as to enter the intestines easily; I carefully took the core out of the 'knot' and I had a tube of soft vegetable substance likely to bring my intended operation to a successful termination if recovery was at all possible. Going back to my patient, I inserted my tube in both the dissevered ends of the intestine, put in three stitches to keep them together, gathered all the bowels into the peritoneum, stitched it, stitched along the thick abdominal covering, and bidding my patient good luck I left him in charge of a native prisoner, whom I released for the purpose. Less than a month afterward, a stalwart, healthy-looking Kaffir appeared before me, bringing two fine cows which he wanted the 'Inkosi' to accept. This Kaffir was my patient, perfectly recovered, the only trace of the wound left being a long scar on the abdomen."

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**BRIGADIER GENERAL JOHN MOORE,
SURGEON GENERAL, U. S. ARMY,—1886-1890.**

Editorial Expression.

The Surgeon Generals of the United States Army.

XV. BRIGADIER GENERAL JOHN MOORE, SURGEON GENERAL OF THE UNITED STATES ARMY.

1886—1890.

DURING the latter days of the administration of Surgeon General Murray, the candidates for the succession had ample time to align their supporters and to organize their claims for consideration. The field for selection was broad and the number of applicants, including nearly all of the senior grades of the Medical Corps, was abundant. There was no lack of qualifications, as any one of the candidates would have honored the position. Major Huntingdon had served through two surgeon-generalcies as principal assistant and had edited with distinguished credit the last surgical volume of the Medical and Surgical History of the Rebellion. Colonel Baxter was the ranking officer in the Medical Department and had evinced a high degree of executive ability as chief of the supply department. Colonel Sutherland had the longest record of service in the corps and brought testimony of the highest character to the ability and efficiency of his service. Lieutenant Colonel John Moore while perhaps the least insistent of the applicants, had many years of distinguished service to his credit and was also politically of the same faith as the then president. It was however a surprise to the service, when, after an interim of three and a half months during which Colonel Baxter, as the senior officer of the Corps officiated as Acting Surgeon General, Lieutenant Colonel Moore was on the 18th of November, 1886, appointed Surgeon General.

General Moore was born in Bloomington, Indiana, August 16, 1826, and received his collegiate education at the Indiana State University. He attended lectures at the Medical School of Louisville in 1848-49, and at the Medical Department of New

York University in 1849-50, graduating in 1850. He was then appointed on the house staff of Bellevue Hospital where he served during the ensuing year.

In 1853 he appeared before the army examining board and, having been duly approved, was commissioned as an Assistant Surgeon in the army on June 29, 1853. His first station was at Fort Myers, Fla., where he remained until 1856 when he was ordered north for a year at Fort Independence, Mass. He then had the good fortune to be detailed to accompany the Utah Expedition of 1857 and remained on that duty for four years, in the meantime receiving his promotion, June 29, 1858, to the grade of Captain.

In pursuance of the policy to bring as many experienced officers east as possible in 1861, he was then assigned to duty at the Marine Hospital in Cincinnati where he remained until 1862, when, having been promoted to the grade of Major, he was detailed as Medical Director of the Central Grand Division of the Army of the Potomac. In 1863 he was transferred, as Medical Director, to the Department of the Tennessee, and in 1864 received the brevet of Lieutenant Colonel for gallant and meritorious service during the Atlantic campaign. In February 1865, he was appointed Colonel and Medical Director of Volunteers and served five months under that commission, receiving during the time the brevet of Colonel "for faithful and meritorious service during the War" and closing his war service in 1866 as Medical Director of the Department of the Mississippi.

During the years 1866 and 1867, he was post surgeon at Fort Wadsworth and Fort Columbus, New York Harbor, and 1868 and 1869 he passed upon examining and other board duty in New York City, whither he returned as attending surgeon in 1870, after a few months as Medical Director at the Headquarters of the 1st Military District, Richmond, Va. After four years in New York and a year as Medical Director of the Department of Texas, he availed himself of a long leave of absence to travel extensively in Europe. Then, after a few months on medical examining board duty in New York, he entered upon five years of service on the Pacific coast, first from 1881 to 1884 as Medical Director of the Department of the Columbia, and from 1884 to 1886, as

Medical Purveyor in San Francisco, having been promoted to the grade of Assistant Medical Purveyor with the rank of Lieutenant Colonel on October 8, 1883. In 1886, he was appointed, by President Cleveland, Surgeon General of the Army.

The administration of General Moore was marked by the greatest advances in Army medical work since the War of the Rebellion. During his first winter, instruction in first aid was inaugurated in the service, by direction of General Order No. 86, from the Headquarters of the Army, November 20, 1886.* No step more important to the welfare of troops had ever been taken than this and its future development proved to be of the greatest advantage in the next war. The first aid books of Captain Dietz, Colonel Smart and the writer resulted directly from this work.

In 1887, the Act organizing a Hospital Corps in the United States Army became a law. With all its crudities, defects and deficiencies this act was the most important medico-military legislation since the act of 1847 giving definite rank to medical officers. The organization of a corps of men whose work was to be confined to the Medical Department added immeasurably to the efficiency of the medical service, while the training of these men and the Company Bearers, provided by law in each company, troop and battery, added much to the labors of the medical officers.

The officers set to work enthusiastically to devise systems of drill, training and instruction. There could hardly be a question of priority in this work since so many were working on the sub-

*The Secretary of War being of the opinion that instruction by lecture or demonstration in the simpler practice of medicine and surgery may with advantage to all concerned be given by officers of the Medical Department stationed at military posts to other officers and the enlisted men serving thereat, directs that whenever practicable and where voluntary attendance in sufficient numbers can be secured, arrangements be made for a series of such lectures on the practical treatment of the unhidden disease, early aid to the injured, the most expeditious and proper manner of treating temporarily gunshot wounds, poisoned wounds, frost-bite, bruises, dislocations, hemorrhage, and fractures of bones; application of the tourniquet: the most approved method for resuscitation from drowning, and other kindred subjects.

Medical officers delivering these lectures will forward, not later than June 30, 1887, through the regular military channels, to this office, a report of the results, beneficial or otherwise, which may have attended them up to that date.

By command of Lieut. Gen. Sheridan.

R. C. DRUM, Adjutant General.

ject simultaneously. The writer's system of litter drill appeared early in 1888 and was soon followed by the official manual of Colonel Heizmann, other works on the subject by Colonels Hoff, Havard and Woodhull and Captain Dietz were issued soon thereafter, and in many directions the active interest of army medical officers became apparent.

In the conduct of his office General Moofe was assisted by a remarkable triumvirate in the persons of Colonel Baxter and Majors Greenleaf and Smart and every phase of the work was managed with the highest efficiency. The last volume of the gigantic Medical and Surgical History of the Rebellion--the third medical volume--appeared during his administration under the editorship of Major Smart. The removal of the Surgeon General's office from the old Riggs Building, in which it had been located since the Civil War, to the spacious accommodations provided for it in the new State, War and Navy Department Building rendered it possible for the work to be better classified and organized.

General Moore was cordially received and sustained by the profession at large. This situation was very evident at a dinner given in 1887 by the New York Practitioners Society in honor of him and of the Surgeon General of the Navy. The attitude of the distinguished representatives of medicine gathered there, was a most gratifying indication of the interest felt by the best element of the profession in its military branch. Similarly the interest manifested in the military section of the Ninth International Medical Congress, held in Washington in 1887 was an evidence of the friendship of the civilian physician for his army compeer, and of the sentiment which prevailed throughout the country during General Moore's administration. He has been an Honorary Member of the Association of Military Surgeons of the United States since 1895.

General Moore, upon his retirement, in 1890 continued his residence in Washington where he still dwells (1904) in hale and hearty old age. He is of large, broad-shouldered frame and powerful physique, and, with fine soldierly bearing, attracts attention wherever he appears.

Current Literature.

THE SPANISH EDITION OF THE SANITARY ORGANIZATION OF FOREIGN ARMIES.*

THE valuable work of Colonel Howard upon the military medical organization of foreign armies now appears in a Spanish version, with the addition of a complete article upon the British service prepared by Colonel Frank Howard and with many other additions by Major Gamero, the translator. It forms a valuable work of reference on the subject and is fully up to date in all respects.

EDGAR'S OBSTETRICS.†

THIS superb work now appears in a second edition with such small revision as the high character of the first edition would permit. Among the added features may be mentioned a new section upon "The Toxemia of Pregnancy," while for the section of the first edition on "Fever in the Puerperium" a new section on "Morbidity in the Puerperium" has been substituted. Material improvements have been made in the illustrations, forty-five new ones having been added and all the colored plates having been remade, together with three new ones. The whole constitutes a most beautiful, instructive and elaborate work deserving of the highest recognition upon the part of the profession.

**Organizacion Sanitaria de los Ejercitos Extranjeros*, por el DR. FRANK HOWARD. Obra traducida directamente del Inglés y ampliada por el Dr. JOSÉ GAMERO GÓMEZ. 8vo ; pp. 394. Madrid, Imprenta de Administración Militar, 1904.

†*The Practice of Obstetrics*. By J. CLIFTON EDGAR, M.D. *Second Edition, Revised*. Imp. 8vo, pp. 1153, with 1264 illustrations. Philadelphia, P. Blakiston's Son & Co., 1904.

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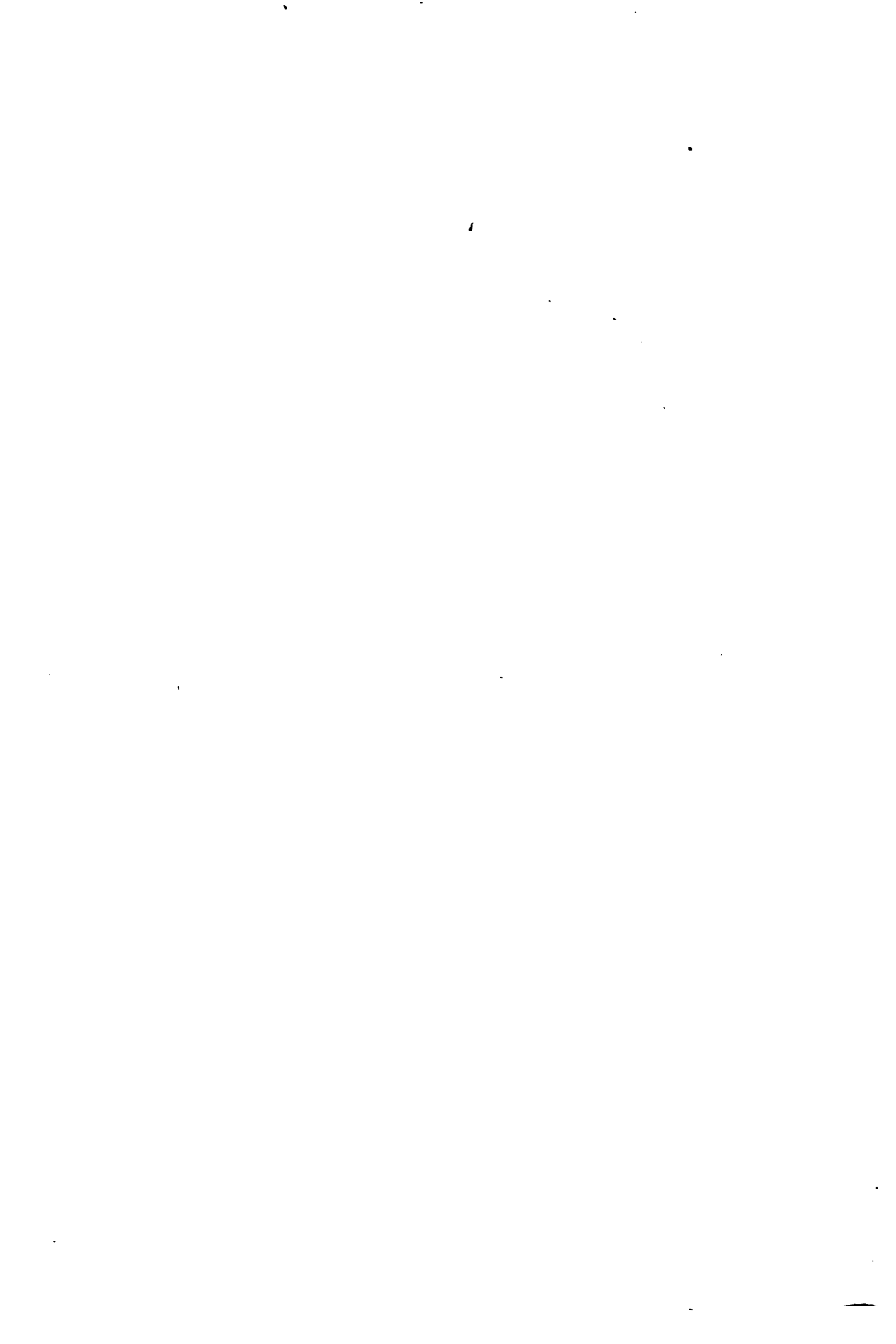
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